THE AUTOMOBILE

WEEKLY NEW YORK—THURSDAY, JANUARY 10, 1907—CHICAGO 10 CENTS

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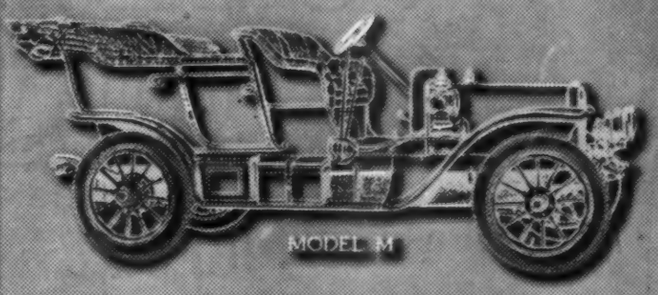
MOTOR CARS



MODEL M

ARE EXHIBITED AT THE BIG

Automobile Show

THE "MIDGLEY WIRE GRIP" IS NOT A NEW TIRE

but a **Wire Grip** (exactly as the name implies) that we are now prepared to fit on special order, and at a fair increase over the regular list prices, to Hartford Dunlop and Clincher tires. Another forward step of The Hartford Rubber Works Co. in the solution of all "tire problems" as they arise in the progress of the automobile industry.

This Wire Grip **absolutely** prevents side slip. Owners of large, expensive cars will no longer be content with separate, unsightly appliances and attachments for temporary use only when they can get the non-skid feature *incorporated in the regular tread.* Especially when this can be done with **a positive gain to the life and wearing quality of the tire.**

We exhibited the Wire Grip for the first time at the A. C. A. Show, Grand Central Palace, New York, December, 1906. We shall exhibit also at the Madison Square Garden Show, January 12-19, a month nearer the large business we expect to do with them in 1907. Look for space 96. Special booklet is now ready to mail; a copy is yours at the drop of a hint.

THE HARTFORD RUBBER WORKS CO.

Hartford, Connecticut, U. S. A.

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Gugler Electric Mfg. Co. 223 Fifth street, S., Minneapolis, Minn.
Mercantile Lumber & Supply Co. 906 Baltimore Avenue, Kansas City, Mo.
Alexander-Elyea Co. 35 No. Pryor Street, Atlanta, Ga.
F. P. Keegan Co. 208 Third Street, Portland, Oregon
Charles L. Seeger (Compania Mexicana De Vehiculos Electricos), Primera Humboldt 12, Mexico D. F., Mexico

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The Celebrated CHELSEA AUTO CLOCKS

8 Day High Grade Clocks

"BEST in the WORLD"

Clocks built with a view to stand the jars and jolts and rough riding of Automobiles. Reputation the highest.

☞ The "SPECIAL" Grades viz: (Design of case patented Dec. 19, 1905.)
- 2¾ in. "SPECIAL" Auto Clock, $36
- 3¼ in. "SPECIAL" " " $45
- 3½ in. "SPECIAL" Motor Clock, $41

In "Round" Cases.
- 2¾ in. Auto Clock, $26
- 3¼ in. " " 28
- 3½ in. Motor Clock, 24

YOU Own a Good Motor Car? BUY THE BEST CLOCK.

The sizes are the approximate diameter of the Dials. All are in Duplex (patent applied for) Polished Cast Brass Cases, the most thoroughly waterproof case on the market. The "Specials" show dial on angle; its clock when removed from outer (locked) case is excellent for use on mantels, bureaus, etc. Outer case secured to dashboard by hidden screws. The 3 1-2 inch motor clock is a strong, reliable clock, but the auto clocks have a somewhat finer train. You want the BEST? Ask for the "CHELSEA."

Chelsea Clock Co.

16 STATE STREET BOSTON

Makers of Exclusively 8 Day High Grade Ship's Bell Clocks, Marine Clocks and Auto Clocks.

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THE AUTOMOBILE

VOL. XVI. NEW YORK—THURSDAY, JANUARY 10, 1907—CHICAGO No. 2

MADISON SQUARE GARDEN'S SEVENTH SHOW

NOW the annual automobile show in Madison Square Garden. This world-known structure has been the scene of many events, but the 1907 affair of the Licensed Association of Automobile Manufacturers will set a new standard for the only well arranged structure possessed by the metropolis of the country—a building utterly inadequate to meet the astonishing demands of an industry that in the short space of six years requires two national shows in New York City in order to present its product, and even then twice as much display space could be utilized were it obtainable. The "Garden Show" embraces the pioneers, with few exceptions, and the present trend of American practise finds more general expression in the Selden camp than could be expected from any body which included many newcomers in automobile manufacture. Two hundred and sixty-five separate exhibits will be the Garden total, including the cars of the members of the Association of Licensed Automobile Manufacturers, the importations of the Importers' Automobile Salon and the quiet-running productions of the Association of Electric Vehicle Makers, and, in addition, the diversified showings of the firms belonging to the Motor and Accessory Manufacturers, Inc. Never before has the Garden show been so thoroughly departmentized. On the main floor and elevated platforms there will be the gasoline, domestic and foreign, pleasure cars; in the café the electrics will repose, and down in the basement the ponderous commercial carriers and some of the overflow accessories will be found. Incidentally it might be mentioned that a rathskeller at the Fourth avenue end will provide a gathering place for those socially inclined. The greater part of the accessory and sundry concerns will be distributed through the concert hall, on the mezzanine platform, and in the gallery. Never has the Garden been subjected to such a thorough rejuvenation; it simply will not be recognized by its patrons of many years' standing. The Publicity Department described the decorative scheme as resembling "a Swiss palace in Autumn"—exactly what that might be is something of a mystery. Nevertheless, the transformation has been artistically accomplished, and one is easily inclined to utilize gorgeous adjectives in telling of the beauty of the place. Snowy peaks, tawny fields and amber skies are depicted in the huge paintings at the end and sides, while heroic statues and fountains add to the general effect with its Alpine complexion. 'Tis said that $75,000 has been expended in supplying the garb of the Garden, which certainly presents a harmonious and symmetrical plan of decoration, with its uniform signs and lights. Certainly the "Goddess of the Show" and her sisters gaze upon a scene unlike that which ever before has served as a setting for an industrial entertainment. "Prosperity," "Triumph" and "Mercury" are typical figures which would seem to belong in the capacious amphitheater.

SOME OF THE SHOW GIRLS

Nearly 150 different models will be presented, ranging from the costliest down to the reasonable little runabout; they will be water-cooled and air-cooled; of eight, six, four and two cylinders; in limousine, landaulet, touring car and runabout form; in fact, the man who cannot be suited will certainly be difficult to please, and the captious will find variations in equipment that will keep him busy for several visits to the big building. Not a nook nor a cranny in the Garden has been left untenanted, but all the occupants are related in one way or another to the commanding auto in its victorious speed march.

Forty-three different makes of gasoline cars will be represented, with eight electrics interspersed and eleven commercial trucks contributed to preserve the equilibrium. The foreign cars will be direct from the Paris Salon, and of course 1907 models beyond question. This is the car list of exhibitors:

AMERICAN GASOLINE.

Apperson,	Locomobile,	Pope-Tribune,
Autocar,	Lozier,	Royal Tourist,
Buick,	Matheson,	Simplex,
Cadillac,	Northern,	Stearns,
Corbin,	Oldsmobile,	Stevens-Duryea,
Columbia,	Packard,	Studebaker,
Elmore,	Peerless,	Thomas,
Franklin,	Pierce Great Arrow	Walter,
Haynes,	Pope-Hartford,	Waltham-Orient,
Hewitt,	Pope-Toledo,	Winton.
Knox,		

FOREIGN GASOLINE.

C. G. V.,	Clément-Bayard,	Hotchkiss,
English Daimler,	Fiat,	De Dietrich,
Panhard,	Rochet-Schneider,	Isotta-Fraschini.
Renault,	Darracq,	

ELECTRIC.

Babcock,	Baker,	Columbia,
Columbus,	Cantono,	Gallia.
Pope-Waverley,	Studebaker,	

COMMERCIAL VEHICLES.

Champion,	Franklin,	Pope,
Knox,	Northern,	Hewitt,
General Vehicle,	Waverley,	Studebaker.
	General Electric,	

GEORGES DUPUY'S EUROPEAN TOUR IDEA.

American manufacturers have been invited to attend a preliminary meeting at which will be discussed Georges Dupuy's "cooperative commercial invasion of Europe by the allied automobile manufacturers of America under the guise of a road and endurance contest for a gold cup." The session will take place at the rooms of the New York Motor Club, Fifty-eighth street and Eighth avenue, January 15, at 11 A. M. Mr. Dupuy outlines a tour that would include France, Spain. Italy, Austria-Hungary, Germany, Belgium and England, occupy about eight or ten weeks, and include at least fifty American cars.

EVENTS SCHEDULED FOR SH... W WEEK.

Sunday, Jan. 13, 8 P. M.—Smoker of New York Motor Club, Reisenweber's, No. 300 West Fifty-eighth street.

Tuesday, Jan. 15, 10:30 A. M.—Monthly meeting Mechanical Branch A. L. A. M., No 7 East Forty-second street.

Wednesday, Jan. 15, 10:30 A. M.—Continuation meeting Mechanical Branch A. L. A. M., No. 7 East Forty-secocnd street.

Wednesday, Jan. 16, 11 A. M.—Annual meeting of National Associaton of Automobile Manufacturers, Victoria Hotel, Broadway and Twenty-seventh street.

Wednesday, Jan. 16, 9:30 P. M.—Hyatt Roller Bearing Company, "Fifth Frictionless Feast," Astor Gallery, Waldorf-Astoria Hotel.

Thursday, Jan. 17, 2 P. M.—Annual meeting of Society of Automobile Engineers, New Grand Hotel, Broadway and Thirty-first street. Annual dinner, same place, 7:30 P. M.

Thursday, Jan. 17, 3:30 P. M.—Annual meeting of A. A. A. at new A. C. A. clubhouse, No. 249 West Fifty-fourth street.

Friday, Jan. 18, 10:30 A. M.—Meeting of New York State Automobile Association, new A. C. A. clubhouse, No. 249 West Fifty-fourth street.

THE FOUR WHO DID MOST OF THE WORK.

Col. George Pope, chairman of the show committee, has been prominent for years in the bicycle and automobile industry. As treasurer of the Pope Manufacturing Company he had to do with the growth of the motor car industry from its birth and with the promotion of all the shows. He is a man of unusual personal popularity, and his word is taken as a bond throughout the trade. As a presiding officer he has a judicial character which brings discussions to a practical focus.

Marcus I. Brock is one of the forceful men of executive ability. He is the assistant general manager of the Association of Licensed Automobile Manufacturers, in which position he has made himself conspicuous by his handling of heavy responsibilities. Previous to taking his present position he was for a number of years the sales manager of the Autocar Company.

Carleton R. Mabley is of the firm of Smith & Mabley, the first regular importing firm established and now one of the largest importers, besides being manufacturers of an American car. As a close student of the Paris shows, Mr. Mabley brings much valuable knowledge to the conferences of the committee.

Merle L. Downs, secretary of the committee, has been prominent in various ways in the industry and with the work of various organizations. He is known for his work in managing several of the big tours, such as the one to Pittsburg in 1903, and that to St. Louis in 1904, and the Glidden tour of 1905. He is now regularly connected with the A. L. A. M. and most of the burden of detail work in connection with the show falls upon him, as upon secretaries generally.

NAIAD WITH DOLPHIN ON FOUNTAIN.

WHERE THE VARIOUS EXHIBITORS HOLD FORTH

IT is something of a task nowadays to thoroughly "do" an auto show, and the average visitor is first inclined to examine that which appeals to him particularly and then more leisurely wander up and down the aisles, climb to the galleries, and descend to the basement. He may have in mind the buying of a new car, or he may be a pioneer who wants something that is exactly up-to-date, and these are the men who have an object in mind as soon as they enter the building. Some have a penchant for tires; others want the road well lighted and make for the lamp exhibits; ignition is always a fruitful source of investigation for the old timer, and everyone wants to know how far he has gone and also how fast he is going. Specialties of all kinds add to the grand total, and therefore the accompanying classification will be a great time-saver, as well as a convenience.

AMERICAN GASOLINE PLEASURE VEHICLES

Apperson Brothers Auto Co.....Elev. Platform 35
Autocar Co.....Main Floor 24
Buick Motor Car Co.....Main Floor 6
Cadillac Motor Car Co.....Main Floor 5
Corbin Motor Vehicle Corp.....Exhib. Hall 39
Electric Vehicle Co.....Main Floor 20
Elmore Mfg. Co.....Main Floor 7
H. H. Franklin Mfg. Co.....Main Floor 22
Hewitt Motor Co.....Elev. Platform 33
Knox Auto Co.....Elev. Platform 29
Haynes Auto. Co.....Main Floor 4
Locomobile Co. of America.....Main Floor 27
Lozier Motor Co. of New York.....Elev. Platform 30
Matheson Motor Car Co.....Elev. Platform 37
Northern Motor Car Co.....Main Floor 2
Olds Motor Works.....Main Floor 8
Packard Motor Car Co.....Main Floor 18
Peerless Motor Car Co.....Main Floor 23
Geo. N. Pierce Co.....Main Floor 28
Pope Mfg. Co.....Main Floor 25
Pope Motor Car Co.....Main Floor 26
Royal Motor Car Co.....Main Floor 1
Smith & Mabley, Inc.....Main Floor 15
F. B. Stearns Co.....Elev. Platform 36
Stevens-Duryea Co.....Main Floor 21
Studebaker Auto Co.....Elev. Platform 31
E. R. Thomas Motor Co.....Main Floor 19
Walter Auto Co.....Elev. Platform 32
Waltham Mfg. Co.....Elev. Platform 34
Winton Motor Carriage Co.....Main Floor 17

IMPORTED GASOLINE PLEASURE VEHICLES

Archer & Co.....Main Floor 11
Auto Import Co.....Main Floor 12
Sidney B. Bowman Auto Co.....Main Floor 13
Darracq Motor Car Co.....Main Floor 10
De Dietrich Import Co.....Main Floor 9
Hol-Tan Co.....Main Floor 16
Smith & Mabley, Inc.....Main Floor 3
Wyckoff, Church & Partridge.....Main Floor 14

AMERICAN ELECTRIC PLEASURE VEHICLES

Babcock Electric Carriage Co.....Exhib. Hall 41
Baker Motor Vehicle Co.....Exhib. Hall 45
Columbus Buggy Co.....Exhib. Hall 38
Cantono Electric Forecarriage.....Exhib. Hall 44
Electric Vehicle Co.....Exhib. Hall 43
Pope Motor Car Co.....Exhib. Hall 42
Studebaker Auto Co.....Exhib. Hall 40

THE TIRE-MAKERS

Aster Co.....Basement 191
Ajax-Grieb Rubber Co.....Concert Hall 165
Continental Caoutchouc Co.....Second Tier Boxes 232
Consolidated Rubber Tire Co.....Mezzanine Floor 83
Diamond Rubber Co.....Mezzanine Floor 46
Dow Tire Co.....Basement 213
Electric Rubber Mfg. Co.....Basement 187
Firestone Tire & Rubber Co.....Mezzanine Floor 75
Fisk Rubber Co.....Mezzanine Floor 91
G & J Tire Co.....Mezzanine Floor 51
B. F. Goodrich Co.....Mezzanine Floor 97
Goodyear Tire & Rubber Co.....Mezzanine Floor 48
Harburg Tire Co.....Basement 229
Hartford Rubber Works Co.....Mezzanine Floor 96
International Rubber Co.....Mezzanine Floor 89
Leather Tire Goods Co.....Third Tier Boxes 252
Morgan & Wright.....Mezzanine Floor 68
Motz Clincher Tire & Rubber Co.....Basement 198
Pennsylvania Rubber Co.....Mezzanine Floor 85
Republic Rubber Co.....Mezzanine Floor 70
R. & P. Traction Tread Tire & Tube Co.....Basement 203
Samson Leather Tire Co.....Basement 216
Trident Tire Co.....Basement 199
Voorhees Rubber Mfg. Co.....Gallery 152

NON-SKIDS, TIRE COVERS, ETC.

Allen Auto Specialty Co.....Second Tier Boxes 245
Gilbert Mfg. Co.....Gallery 137
Hopewell Bros.....Gallery 150
Weed Chain Tire Grip Co.....Gallery 141

LUBRICATING OILS AND GREASES

Dixon Crucible Co.....Gallery 106
A. W. Harris Oil Co.....Gallery 133
Havemeyer Oil Co.....Second Tier Boxes 232
Vacuum Oil Co.....Gallery 130
John T. Stanley.....Basement 211
Harrington Lubricant Co.....Second Tier Boxes 253
Adam Cook's Sons.....Second Tier Boxes 241
N. Y. & N. J. Lubricant Co.....Mezzanine Floor 59
W. C. Robinson & Son Co.....Gallery 131
O. W. Young.....Gallery 117

COMMERCIAL VEHICLES—GASOLINE

H. H. Franklin Mfg. Co.....Basement 180
Hewitt Motor Co.....Basement 183, 219
Knox Auto Co.....Basement 179

COMMERCIAL VEHICLES—ELECTRIC

General Vehicle Co.....Basement 185
Pope Motor Car Co.....Basement 178
Studebaker Auto Co.....Basement 184

BEARINGS

American Ball Bearing Co.....Mezzanine Floor 88
J. S. Bretz Co.....Second Tier Boxes 247
Hyatt Roller Bearing Co.....Mezzanine Floor 92
Hess-Bright Mfg. Co.....Concert Hall 157
Timken Roller Bearing Axle Co.....Mezzanine Floor 81
Steel Ball Co.....Mezzanine Floor 64

BATTERIES

American Elec. Novelty & Mfg. Co.....Concert Hall 158
Eastern Carbon Works.....Gallery 110
Electric Storage Battery Co.....Second Tier Boxes 248
Franco-American Supply Co.....Basement 189
Gould Storage Battery Co.....Basement 226
Kitsee Storage Battery Co.....Basement 195
Motor Car Specialty Co.....Gallery 138
National Battery Co.....Concert Hall 163
National Carbon Co.....Mezzanine Floor 65
National Sales Corp.....Basement 215
Semi-Dry Battery Co.....Third Tier Boxes 262
Stackpole Battery Co.....Gallery 148
Vesta Accumulator Co.....Gallery 151
Witherbee Igniter Co.....Gallery 144

SHOCK ABSORBERS

Diezemann Shock Absorber Co.....Gallery 132
Graham & Goodman, Inc.....Basement 207
Hartford Suspension Co.....Mezzanine Floor 77
P. M. Hotchkin.....Third Tier Boxes 250
Kilgore Auto Air Cushion Co.....Mezzanine Floor 69
J. H. Sager Co.....Gallery 116
Vestal Shock Absorber Co.....Gallery 108

SPEEDOMETERS AND ODOMETERS

Hoffecker Speed & Mile Register Co.....Concert Hall 176
Hopewell Bros. .....Gallery 150
Jones Speedometer Co.....Mezzanine Floor 84
Lipman Mfg. Co.....Gallery 129
Charles E. Miller.....Mezzanine Floor 101
Motor Car Specialty Co.....Gallery 138
Oliver Instrument Co.....Gallery 104
Post & Lester Co.....Mezzanine Floor 98
R. H. Smith Mfg. Co.....Gallery 134
S. Smith & Son, Ltd.....Basement 217
Veeder Mfg. Co.....Mezzanine Floor 53
Warner Instrument Co.....Mezzanine Floor 80
Webb Mfg. Co.....Mezzanine Floor 66
Winchester Speedodometer Co.....Mezzanine Floor 72

MAGNETOS AND DYNAMOS

Dayton Electrical Mfg. Co.....Mezzanine Floor 50
Motsinger Auto Device Mfg. Co.....Mezzanine Floor 63
Pittsfield Spark Coil Co.....Mezzanine Floor 47
Remy Electric Co.....Mezzanine Floor 61
Robert Bosch, N. Y. Inc.....Basement 214
Lavalette & Co.....Basement 212
Leon Rubay .....Basement 93
Sibley & Pitman.....Basement 197
Albert Champion Co.....Basement 190
Holley Brothers Co.....Mezzanine Floor 73
C. F. Splitdorf.....Mezzanine Floor 49

GEARS, AXLES, DIFFERENTIALS, PARTS, ETC.

Brown Lipe Gear Co.....Mezzanine Floor 56
Direct Drive Axle Co.....Concert Hall 155
Standard Brake Co.....Basement 210
Timken Roller Bearing Axle Co.....Mezzanine Floor 81
Warner Gear Co.....Mezzanine Floor 82
Hartford Auto Parts Co.....Gallery 103
Muncie Auto Parts Co.....Gallery 109
Globe Machine & Stamping Co.....Gallery 148
Gemmer Engine Co.....Concert Hall 170
Carpenter Cap Screw Co.....Second Tier Boxes 243

WIRE CABLE, TIMERS, PLUGS, AMMETERS, ETC.

Aster & Co.....Basement 191
Atwater-Kent Mfg. Co.....Gallery 145
T. Alton Bemus, Inc.....Third Tier Boxes 257
E. M. Benford.....Gallery 149
J. S. Bretz Co.....Second Tier Boxes 247
Byrne, Kingston & Co.....Mezzanine Floor 57
Albert Champion Co.....Basement 190
Connecticut Tel. & Elec. Co.....Gallery 142
Herz & Co.....Concert Hall 174
Geo. Loring Co.....Third Tier Boxes 254
A. R. Mosler Co.....Gallery 128
National Sales Corp.....Basement 215
C. F. Splitdorf.....Mezzanine Floor 49
Uncas Specialty Co.....Gallery 105

PUMPS, TOOLS, JACKS, ETC.

Cooks Railway Appliance Co.....Mezzanine Floor 71
Stevens & Co.....Mezzanine Floor 100
Peter A. Frasse Co.....Second Tier Boxes 244
Garvin Machine Co.....Basement 181b
Duff Mfg. Co.....Basement 221
Autmo Cabinet Co.....Basement 196a
Oliver Mfg. Co.....Gallery 120
Patterson, Gottfried & Hunter.....Basement 201
Wray Pump & Register Co.....Concert Hall 171
Utility Co. .....Mezzanine Floor 62

CARBURETERS AND COILS

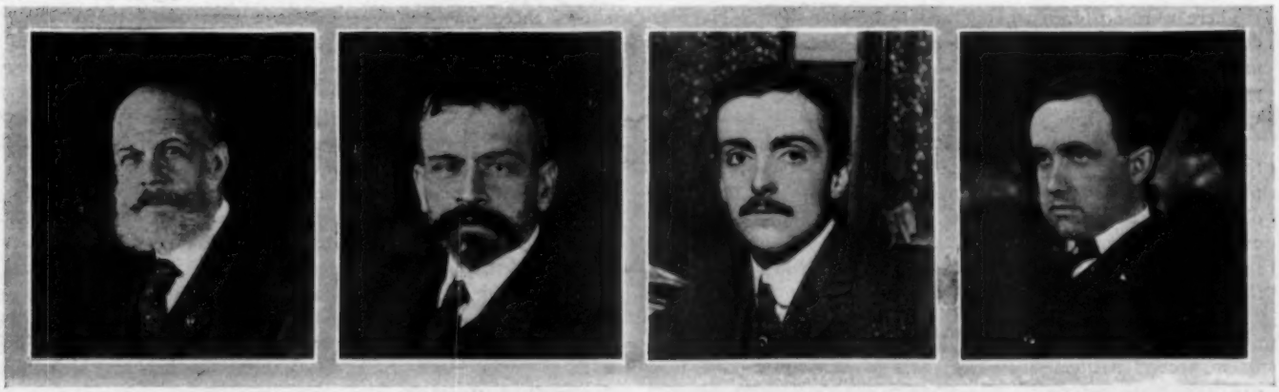
Autocoil Co. .....Mezzanine Floor 58
Byrne, Kingston & Co.....Mezzanine Floor 57
Conn. Tel. & Elec. Co.....Gallery 132
Duplex Ignition Co.....Gallery 126
Heath Dry Gas Co.....Basement 230
Holley Bros Co.....Mezzanine Floor 73
Nat. Sales Corp.....Basement 215
Pittsfield Spark Coil Co.....Mezzanine Floor 47
C. F. Splitdorf.....Mezzanine Floor 49
Wheeler, F. H.....Concert Hall 177

LAMPS

Badger Brass Mfg. Co.....Mezzanine Floor 90
R. E. Dietz Co.....Mezzanine Floor 52
Edmunds & Jones Mfg. Co.....Gallery 140
English & Mersick Co.....Gallery 122
Gray & Davis.....Mezzanine Floor 52
C. T. Ham Mfg. Co.....Concert Hall 168
Manhattan Lamp Works.....Second Tier Boxes 238
National Novelty Co.....Third Tier Boxes 264
Portable Electric Safety Light Co.....Third Tier Boxes 260
Rose Mfg. Co.....Mezzanine Floor 92
Rushmore Dynamo Works.....Gallery 124

MISCELLANEOUS EXHIBITS.

Acetyvone Co.—Carbide.....Gallery 148
Albert Champion Co.....Basement 190
Harry A. Allers & Co.—Polish.....Second Tier Boxes 246
American & British Mfg. Co.....Gallery 113
Aurora Automatic Machine Co.....Concert Hall 172
The Auto Supply Co.....Second Tier Boxes 238
Avery Portable Light Co.....Gallery 118
The A-Z Co.....Third Tier Boxes 265
Baldwin Chain Mfg. Co.....Mezzanine Floor 60
Bethlehem Steel Co.....Gallery 111
Blue Ribbon Horse & Carriage Co.....Basement 181a
Brennan Motor Mfg. Co.....Concert Hall 164
Briscoe Mfg. Co.....Mezzanine Floor 67
S. F. Bowser & Co.....Concert Hall 166
Brooklyn Motor Supply Co.....Basement 225
Buick, Thomas D., Co.....Basement 186
Byrne, Kingston & Co.....Mezzanine Floor 57
Carpenter Steel Co.....Gallery 115
Chandler Co.—Name plates.....Gallery 136
Class Journal Co.....Basement 208
C. Cowles & Co.—Elec. Specialties.....Second Tier Boxes 234
Wm. Cramp & Sons, Ship & Engine Bldg. Co.....Gallery 112
Detroit Lubricator Co.....Concert Hall 169
Detroit Motor Car Supply Co.....Concert Hall 156
Diamond Chain & Mfg. Co.....Concert Hall 167
Wm. J. Duane & Co.....Concert Hall 160
Michael Ehret .....Basement 182a
Energine Refining Co.—Energine.....Third Tier Boxes 261
Gabriel Horn Mfg. Co.....Concert Hall 173
General Elec. Co.—Mercury Arc Rectifiers.....Basement 181
Gray, Hawley Mfg. Co.....Gallery 139
Hill Mfg. Co.....Basement 204
E. F. Hodgson—Wigwam Garages.....Basement 194
E. P. Ingersoll.....Basement 227
Phineas Jones & Co.....Mezzanine Floor 76
E. T. Kimball Co.....Third Tier Boxes 249
Julius King Optical Co.—Goggles.....Basement 228
Light Mfg. & Foundry Co.....Gallery 127
Manhattan Auto Top Co.....Basement 209
Manhattan Storage Co.....Basement 188
Manufacturers' Foundry Co.....Mezzanine Floor 54
Metal Stamping Co.....Basement 205
Midgley Mfg. Co.....Mezzanine Floor 95
Charles E. Miller.....Mezzanine Floor 101
Morrison, McIntosh & Co.....Third Tier Boxes 251
Motor .....Basement 196
Motor Car Equipment Co.....Basement 192
Mutual Auto Accessories Co.....Basement 220
National Oil Pump & Tank Co.....Basement 224
National Sales Corporation.....Basement 215
Noera Mfg. Co.....Gallery 146
N. Y. Sporting Goods Co.....Basement 202
Pantasote Leather Co.....Concert Hall 161
Post & Lester Co.....Mezzanine Floor 98
Thos. Prosser & Son.....Gallery 121
J. M. Quinby & Co.....Basement 182
Rands Mfg. Co.....Concert Hall 159
P. Reilly & Son—Leather.....Basement 186a
M. E. Schoening.....Basement 206
Schwarz Wheel Co.....Gallery 114
C. A. Shaler & Co.—Elec. Vulcanizers.....Second Tier Boxes 237
Shelby Steel Tube Co.....Mezzanine Floor 78
Sibley & Pitman.....Basement 197
Stall & Dean Mfg. Co.—Sporting Goods.....Third Tier Boxes 259
Standard Metal Work Co.....Third Tier Boxes 263
Standard Welding Co.....Mezzanine Floor 87
Stevens & Co.....Mezzanine Floor 100
Spicer Univ. Joint Mfg. Co.....Gallery 135
Sprague Umbrella Co.....Concert Hall 154
Springfield Metal Body Co.....Gallery 119
Syracuse & Elbridge Glove & Mitten Co.....Second Tier Boxes 237
Trades Adv. Pub. Co.....Basement 222
Turner & Fish Co.....Concert Hall 162
Valentine & Co.—Varnishes.....Gallery 107
Vehicle Apron & Hood Co.....Basement 218
Watres Mfg. Co.....Second Tier Boxes 236
Way Muffler Co.....Gallery 153
Whitlock Coil Pipe Co.....Mezzanine Floor 93
Whitney Mfg. Co.....Mezzanine Floor 55



GEORGE POPE. M. I. BROCK. C. R. MABLEY. M. L. DOWNS

HOW THE AUTO SHOW IDEA DEVELOPED

By ARTHUR N. JERVIS.

AN argument in favor of January as the time for shows has been advanced recently by no less an important and authoritative person than Col. George Pope, chairman of the show committee of the Association of Licensed Automobile Manufacturers. In his remarks Col. Pope said:

"In years gone by, when the old guard makers were new in the field, and were looking for dealers to handle their product, the national show was largely a trade event, to which the manufacturers went seeking to do business with retailers. Now the old established manufacturers all have their regular line of dealers and the orders from these are booked in the fall. They do not go to the show to engage dealers to handle their output, because they are already supplied in this respect. They go to display their new models to the public, and the show, from being a purely trade event, has become a sort of festival for society and the automobiling class.

"Under these circumstances there is absolutely no call by the well-known manufacturers of the licensed cars for a show before January. They are not firms that started in business last month, or last year, and who have to hunt up dealers to sell their cars. The dealers in licensed cars, like the makers of them, are all established."

This calls attention to a fact of which there can be no question—the character of the Garden show has changed radically within a few years. No longer is it looked upon by the big manufacturers as an annual market for the booking of contracts with agents. This feature of the show has been waning during the last three years, and now the business done at shows between retail dealers and manufacturers is of secondary importance. This change in the function of the show is the more interesting because it is, in a way, a reversion. The first show, like that of this year, was addressed to the public rather than to the trade.

The First American Show in 1900.

A review of the shows brings out the story of the changes and will be interesting at this time. If the exhibition of a few "horseless carriages" at the last bicycle show at Madison Square Garden in January, 1900, be passed over, the first real automobile show was held in the Garden November 3-10, 1900.

Although the credit of the idea has been given to the Automobile Club of America, it really originated with James P. Young, secretary and treasurer of the Madison Square Garden Company. Mr. Young sought the cooperation of the Automobile Club of America, and the first show was announced as being under the auspices of the club.

A good photograph of that show would cause a hearty laugh now, although it was held only a little more than six years ago. There were not enough exhibits to fill the space, even with a board track on the main floor, although motorcycles and motor tricycles were included with the automobile. The machines themselves were "near automobiles," of the shaftless buggy type, nearly all of them having steam or electricity for motive power. In the café were the nearest approaches to real motor cars. These were loan exhibits of imported cars, owned by members of the club, and they seemed quite wonderful at the time. The track was used for gymkhana events, braking, starting, and stopping tests, and other stunts. The mental attitude of the visitors was similar to that of investigators in an inventor's workshop who call to see if his device is really practical. The presence of the track and the whole arrangement suggested that it was a demonstration to answer the public's skeptical query of: "Will they go?" Very often they would not go. However, the first show was a success financially. During the following week an attempt was made to establish the Grand Central Palace as the home of future shows by inaugurating an exhibition there and announcing it as a continuance of the Garden show. This affair gathered in a few exhibitors who were not ready in time for the other event, but it was only a moderate success, and no attempt has since been made to have a show in that building until the present year.

The complete list of exhibitors at the first show is an interesting one, to glance over at this time, in view of the changes that have occurred. This is the list:

Electric Vehicle Co.
Riker Vehicle Co.
Locomobile Co. of America.
National Automobile & Electric Co.
De Dion-Bouton Motorette Co.
Waltham Manufacturing Co.
American Bicycle Co.
Winton Motor Carriage Co.
Mobile Co. of America.
Baker Motor Vehicle Co.
Autocar Co.
Foster Automobile Mfg. Co.
Automobile Co. of America.
Woods Motor Vehicle Co.
Stanley Manufacturing Co.
Canda Manufacturing Co.
Buffalo Electric Carriage Co.
Daimler Manufacturing Co.
Holyoke Automobile Co.
Knox Automobile Co.
Overman Automobile Co.
International Motor Carriage Co.
Trinity Cycle Manufacturing Co.
John T. Robinson & Co.
Peerless Manufacturing Co.
Springfield Cornice Works.
St. Louis Motor Carriage Co.
Haynes-Apperson Co.
Strong & Rogers.
Duryea Motor Co.
Upton Machine Co.
Automobile Club of America.
Edmond Motorcycle Co.
New York Motor Vehicle Co.
Munger Vehicle Tire Co.
Steam Vehicle Co.
Badger Brass Manufacturing Co.
Bevin Bros. Manufacturing Co.
E. A. Brecher & Co.
Consolidated Rubber Tire Co.
Crest Manufacturing Co.
Diamond Rubber Co.
Dixon Crucible Co.
Downing & Co.
Dow Portable Electric Assistant Co.
Gleason Peters Air Pump Co.
B. F. Goodrich & Co.
Goodyear Tire and Rubber Co.
Gray & Davis.
Hartford Rubber Works Co.
Janney, Steinmetz & Co.
Metallic Rubber Tire Co.
Charles E. Miller.
New Process Raw Hide Co.
New York Belting & Packing Co.
Pennsylvania Automobile & Gear Co.
C. F. Splitdorf.
Veeder Manufacturing Co.
Ware Bros.

There were no foreign exhibitors in the first show. The Garden was crowded at every session and the show was a success financially, as all succeeding shows have been. The cost of putting the first show on was $11,000, outside the decorations, which were paid for by the exhibitors.

At this time the manufacturers were few in number and their total output was small. They had little need to look for dealers to handle their output, and it safely may be said that their chief object in participating in a show was that of edifying with the exploitation of new improvements and reviewing enthusiasm in those who were already automobilists, of arousing interest on the part of the public, and of selling cars direct to the users.

Ninety-three in the Second Show.

The second national show was held in Madison Square Garden, December 2-9, 1901. Ninety-three exhibitors took space in this. The track was omitted this time, but again there was a loan exhibit of foreign cars in the café. There was a Mors car shown by Foxhall P. Keene, half a dozen Panhard and Levassor machines, a Darracq, a Napier, a Renault and a Daimler-Cannstatt Mercedes. No foreign exhibitors had space.

The industry had then begun to develop rapidly. There was an increasing output by the factories, so that the makers found it more necessary to act as wholesalers only. The distance between the user and the manufacturer increased and the retailer began to flourish. Thus, during 1902, the show came to be regarded as a wholesale mart of manufacturers seeking to close with dealers. During this year the commercial future of American built cars became more certain. The National Association of Automobile Manufacturers was formed, and after a few conferences it was arranged that the next show should be at the beginning of the year instead of at the close, and that it should be managed by a committee on which the N. A. A. M., the Automobile Club of America and the Garden Company should each be represented, and that each of these organizations should share in the profits. Thus there was no show in 1902, and the third one was held a year and five weeks after the second one, or during January 17-24, 1903. At this show the number of exhibitors totaled 150, and for the first time a foreign firm was an exhibitor; this was the Paris Automobile Co., represented by Henry Fournier.

The Succeeding Shows.

At the third show the horseless buggy type began to disappear in favor of the European type of car, and after this the change of types was rapid, each succeeding year seeing fewer buggies and runabouts, fewer steamers and more gasoline cars. The single-cylinder motor and the horizontally disposed engine also were crowded aside, although not abrogated, any more than were steam and electricity.

The fourth national automobile show was held at Madison Square Garden, January 16-23, 1904. More than 200 exhibitors took space, including several foreign manufacturers. This show was held under the same auspices as the previous one. At the fourth show the vertical engine, located under the hood in front, was dominant, and the full-fledged touring car was revealing itself as the popular type, rather than the runabout with the detachable tonneau. Portents were fulfilled in 1905, and the tendency toward larger and higher powered cars became well established.

Then Came the Fifth Show.

By the time for the fifth show, which was held in Madison Square Garden January 14-21, 1905, the automobile industry had grown to such proportions that hundreds of would-be participants were unable to secure space, although 250 exhibitors were accommodated in the big building. At the shows of 1904 and 1905, the number of exhibitors was so great that the Garden was sadly crowded, and, each exhibitor being allowed to decorate his space to suit himself, the ensemble presented a motley scene of hodge podge in draperies and lighting effects At all these shows there was to some extent a sort of "first come, first served" policy—after the big makers were provided for—and the result was that the public was gulled to a certain degree, because every year there were upstart concerns, with experimental models, who promised great things, some booking orders, and who afterward sank into oblivion. It was seen by all that a weeding out and a discriminative exclusion would be wise, but the way to do it was what puzzled, until the problem was solved by the positive action of the veteran makers linked together in the Association of Licensed Automobile Manufacturers.

With the 1905 show, the contract between the National Association of Automobile Manufacturers, the Automobile Club of America and the Madison Square Garden Company expired, and the Association of Licensed Automobile Manufacturers obtained a three years' lease of the Garden, for the purpose of holding future shows under the auspices of the licensed makers, who were organized in March, 1903.

Now the Licensed Body Has the Garden.

Since 1905 the Garden show has been held under the auspices of the A. L. A. M., and the highly successful show there, January 13-20, 1906, was in charge of the same show committee that has the arrangements for the present one in hand, namely: George Pope, Marcus I. Brock and C. R. Mabley, with M. L. Downs secretary.

Under the new management there was a revolution in the matter of decorations, and so great a revolution was it that no affair which finds shelter in the Garden, neither horse show, ball, nor military pageant, has the gorgeousness of the annual automobile show. The lighting and decorating was put in charge of a committee, uniformity secured by not permitting any exhibitor to do a bit of decorating, and the artistic work given to a professional. Last January the old Garden presented a scene of grandeur that made regular patrons of it gape and gasp. The color scheme was white and gold, and the whole was laid out to represent an Italian garden in the summer time.

At the present seventh national show, January 12-19, the glory of the last is to be totally eclipsed. A fortune was spent in transforming the Garden into a scene of dazzling brilliancy. The general scheme is that of the Garden of a Swiss palace in early winter. The somber tones of the Garden are completely lost in the blazing glories of autumn foliage on rustic bowers, of sunset hues upon snowy peaks, and tawny fields beneath amber skies. The illusion is carried out to the uttermost and made perfect by heroic paintings at the ends and sides, which yield the spectators a grand perspective of Alpine scenery. Fountains and statues of allegorical design enhance the picture and help to furnish a setting for the jewels of the automobile industry.

Diplomats Who Will Attend the Opening Saturday Night.

From Washington will come on Saturday in a special train representatives of the embassies of Italy, Austria-Hungary, France, Great Britain, Germany, Brazil, Russia and Mexico. They will be met at the ferry with automobiles, and it is expected will reach Madison Square Garden not later than 8:30 P. M. The culminating feature of the lights arrangement will not be demonstrated until the arrival of the distinguished foreigners, the list of which is as follows:

Italy—Baron Edmondo Mayor des Planches, the Italian Ambassador and the dean of the diplomatic corps, accompanied by Count Neni-Mocenigo; Austria-Hungary—Ambassador Ladilaus Hegelmulle von Hengervar; France—M. des Portes de la Fosse, counsellor, and Lieut. de Blanpre, naval attache; Germany—Herr and Fraulein Hebbinghaus; Great Britain—E. V. Sturdy; Brazil—S. Gurgel do Amaral, first secretary; Russia—M. de Thal, secretary; Mexico—S. Balbino Valalos, charge d'affaires, his daughter, Senor Ricoy, and Mr. and Mrs. Landa Berriozabel.

After attending the opening of the show, the ambassadorial party will be the guests of the reception committee at dinner. They will remain in New York City over night.

MECHANICAL PROGRESS THAT WILL BE TOLD

By VICTOR LOUGHEED.

AT the show in Madison Square Garden there will be in evidence a mechanical progress commensurate with its splendid setting, which likewise will bespeak an advance not heretofore achieved by the industry. As never before, it is evident in the product of the thirty members of the Licensed Association that the American manufacturer has thrown down the gauntlet to his foreign competitor—and, in most cases, predecessor. The preeminence of the foreign engineer in the past has been a fact denied rather than disapproved, but now the proof is crowding close on the heels of the statement, and it is made clear in no uncertain way that the cars for the Garden show are fully capable of price, style, finish, reliability, quality, or any other kind of competition with their imported competitors.

Not the most critical mind can find any serious fault with the 1907 productions of the foremost American firms, and it is especially clear beyond all question that the biggest automobile bargains for the money are invariably American made, whatever may be thought of the less commercialized phase of the situation that achieves its successes regardless of price.

As has been increasingly apparent at each of the last few shows, the tendency towards acceptance of certain highly standardized and specialized forms is more emphasized than ever, and there is not a single manufacturer who does not present four-cylinder vertical motors in front, usually with sliding change-speed gears and drive by double chain or propeller shaft to the rear axle. Besides this most important construction there are, however, a number of motors of other type shown in the less expensive models, there being several two-cylinder horizontally-opposed motors, one horizontal single cylinder, and one vertical single cylinder. The horizontal-opposed motors are shown in both of their usual applications—longitudinally under the body and crosswise in front.

The six-cylinder engine, without having begun to sweep the field, as it is claimed to have done abroad, nevertheless is much in evidence. There is no question about the superior flexibility and torque range of the six-cylinder motor, but against this is the greater length and complication. Nothing but time can tell whether the advocates of the six-cylinder construction are destined to win general acceptance for the type they so strenuously uphold. A point that seems to give particular difficulty in the designing of these six-cylinder motors is the arranging of the intake piping, which every manufacturer arranges in a way that is peculiarly his own, showing that this detail is far from being reduced to final form and that the difficulty of feeding the cylinders uniformly is appreciated. One manufacturer goes the six-cylinderites two better, so to speak, and is placing on view an eight-cylinder motor, with the cylinders arranged in two diverging rows, constituting a typical example of the well-known V-shaped construction.

Air cooling is applied to the cars of at least four concerns, and, though it has failed to find more extensive acceptance, its continued use by these concerns—all of the highest standing and prominence—is assurance enough that it is a thorough success. Of particular interest to the novice and expert alike are the minor but not less important refinements through which greater reliability and operating satisfaction is insured.

Water cooling departs little from practice previously established, the changes being mostly in the direction of more liberal waterjacket spaces, larger piping, etc. The rotary gear pump seems to be displacing the centrifugal pump to some extent, while the inclosed gear drive for pumps has become all but universal.

The two-cycle engine has lost ground to the extent that one well-known maker who exhibited a car propelled by this type of motor last year has this year given it up. Against this reflection upon the merits of the two-cycle principle there is the greater success than ever before of the single manufacturer who still sticks to it, and the three and four-cylinder vertical-in-front two-cycle motors put out by this concern run with a smoothness and satisfaction not exceeded by the product of the best of their competitors.

Clutches will show a very considerable tendency in the direction of the multiple-disc, though by the use of cork inserts the cone and expanding clutches are perhaps in a fair way to hold their own. Easier working clutch springs, with smoother and more certain engagement, will be the most obvious results of these improvements.

Change-speed gears show a considerable gain for the gate-quadrant and selective-lever method of operation, which has the advantage over the progressive system of permitting the passing from any speed to any other without going through the intermediates. Four speeds ahead are the rule of all the larger and heavier cars, and in the cases where three speeds are retained, because of extreme motor simplicity or for other reasons the progressive method of operation is strongest. The simple manipulation of the individual clutch and planetary gears appeal to a number of manufacturers who evidently believe that foolproofness is a good quality for a car to possess. The most noteworthy of the planetary gears is that fitted to a large touring car of well-known make, with three forward speeds and the reverse. This gear has been used without radical change for two seasons and seems to give excellent satisfaction. The rest of the planetary gears are of the two-speed-forward-and-reverse type and are found only on the smaller cars. One example of a friction transmission is shown, applied to the smallest and lowest-priced car on the American market, which is made in a variety of styles, suitable for various classes of commercial and pleasure uses.

The propeller-shaft drive predominates to some considerable extent over its rival, the double chain, but the latter scores a point in that its use is most prominent on the cars of presumed highest quality, so the situation in respect to this phase of automobile evolution seems to strike a very even balance.

GODDESS OF THE SHOW.

The I-beam axle section is manifestly increasing its vogue, for front axles especially, but also for rear axles where the propeller-shaft drive is in use. Here again it is evident that the dissenters from this construction feel that they have good reasons for not adopting it, in that they challenge any interested party to produce evidence reflecting upon the quality of their tubular, rectangular and other sections.

The annular ball bearing—chiefly of the Hess-Bright pattern, though neither the Malicet & Blin nor the Standard are inconspicuous—has swept the field for certain classes of use, but in other places the conical roller bearing of the Timken people and the roller bearing of the Hyatt people seem as strongly intrenched as ever.

Ignition systems are better than heretofore, and a great attention to details is apparent, but otherwise there are few changes from the constructions of previous years. The make-and-break system shows gains, but is still behind its competitor, the jump-spark.

Carbureters seem to be in a more unsettled state than any equally important element of automobile mechanism, if the variety of improvements be taken as a criterion. There are several cases in which the elaborate compensating mechanisms have been given up, but in others there is more elaboration than ever. In a couple of cases, at least, the stock fitment consists practically of two carbureters, one supplying the mixture at the lower speeds and the other coming into action only at high speeds. Despite the diversity devices all of them seem to give excellent satisfaction in use, which is, after all, the most important thing, and which simply goes to show that there are more ways than one of securing a desired end.

Especially significant, though from its very nature anything but especially noticeable, is the widespread acceptance of foreign practice in respect to the use of alloy steels for the parts on which devolve the heaviest and severest duties. It is now recognized that the merit of these high-grade materials is a question of fact rather than of opinion, and if one grade of steel will stand twice the stresses and cost little more than another, it requires only the commonest kind of good mechanical common sense to dictate its use for the vital details of an automobile.

Body designs exhibit considerable improvement, the most impressive feature of the season's development in this regard being the number of high-power runabouts, striking both in appearance and in traveling qualities, since most of them constitute little less than genuine racing cars. A somewhat singular feature of this development is the failure of a single inclosed-body construction to appear on any of these runabouts, such as seemed indicated in the inside-driven broughams and coupés in favor a year or so ago. Both the limousine and the landaulet types are numerous, though the latter seems to be assailing the prestige of the former in some degree, apparently because of the advantage it presents in being capable of folding up, to make it suitable for both good and bad weather. The one-time popular canopy top is practically out of the running, its place having been thoroughly usurped by the folding Cape Hood. The glass front, formerly easily disposed of out of the way by folding against the canopy top, has not worked out so simply in connection with the Cape Hood, but the problem now seems solved by the expedient of folding the glass front down over the bonnet.

Accessories are numerous. It is enough to say here that a ramble through the accessory exhibits would interest the average enthusiast for as many weeks as the number of days that the show will be open. Lamps, speed indicators, odometers, ignition specialties, lubricating devices, shock absorbers, bearings, and a multitude of the other details that are essential to the fully-equipped car, all show progress.

Tires, like the materials of car construction, present few changes in outward appearance, but are confidently asserted to have gained materially in quality. Several examples of the newest tire idea—the removable rim, providing for the replacement of complete, inflated units, ready to be placed on the wheel in the briefest possible time, will be on view.

VANDERBILT CUP WINNER FOR THE FLORIDA MEET

LOUIS WAGNER, winner of the 1906 Vanderbilt Cup race, will be the star of the Ormond-Daytona meet, January 21-26. It had been expected that Demogeot, last year's winner of the speed crown, again would carry the Darracq colors in the Florida touranment, and in consequence there was considerable surprise when Wagner arrived Monday last on *La Bretagne*. A. Lee Guiness, the English owner of the 200-horsepower car which Demogeot drove two miles in 58 4-5, at the last moment was unable to sail. Therefore Wagner, driving the Vanderbilt Cup winner, will be the solitary Darracq professional in Florida, though Samuel B. Stevens, president of the New York Motor Club, expects to participate in the amateur events with the 1905 Darracq cup winner. A fast Oldsmobile flyer, with H. N. Harding at the wheel, is expected. R. W. Harroun, of Chicago, with the lightest racer ever constructed, is going to try in the high speed division. It weighs less than 500 pounds, and those who visited the Aero Club department of the A. C. A. show will remember having seen the Harroun creation.

Five Stanley steamers will participate, Fred Marriott, of course, to figure as the pilot of the fastest one of the quintet. H. Ernest Rogers, the Brookline amateur, and F. L. Fyles, of Providence, are other steam entrants, the latter's car to be driven professionally by L. F. N. Baldwin.

The stock car entrants already include two Waynes, an American Mercedes, a Stoddard-Dayton and a Welch. The motorcycle contingent will include Curtis and Indian cycles, both concerns having something out of the ordinary for the Florida contests. Jefferson De Mont Thompson, chairman of the A. A. A. Racing Board, will be the honorary referee, and Samuel A. Miles, general manager of the N. A. A. M., will be the acting referee. It is expected that those in attendance at the Garden show will leave for Florida on the Seaboard noon trains of Saturday and Sunday.

BRITISH AERONAUTS FOR ST. LOUIS RACE.

A cable received from London announces that the Aero Club of Great Britain has decided to send a team to St. Louis to compete for the Gordon Bennett Cup. Professor A. K. Huntington, of King's College, London; Hon. C. S. Rolls, at present in America; Griffith Brewer, and J. T. C. Moore-Brabazon, all of whom figured in the first contest from Paris last year, will constitute the 1907 British team. With a full entry from Great Britain and France, competitors from Spain, Belgium and Germany, and a possibility of Italian participation, a great international race is assured. An encouraging report has been received from Washington on the club's efforts to have foreign balloons entered in the race admitted free of duty, and a definite decision is expected in a few days on the question.

AMERICAN ENTRANTS FOR BALLOON RACE.

Alan R. Hawley and William A. Hawley, of the Aero Club of America, will purchase the largest balloon allowed by the rules for the Gordon Bennett contest, and have decided to spend the early part of the summer at Paris receiving instruction in aeronautics. The Aero Club of St. Louis and another Aero Club of America will also have maximum size balloons, so that America is assured of having entrants who will not be handicapped by reason of not having balloons of the largest possible capacity.

At Cincinnati an aero club is being organized, and a request has been made to the Aero Club of America for the loan of one of the club's balloons to make trial ascensions from that city, where the quality of gas has been found to be very good.

THE LICENSED ASSOCIATION AND ITS WORK

By HARRY T. CLINTON, Publicity Department.

THE work of the Association of Licensed Automobile Manufacturers is the most interesting factor in the great industrial field. The history of the Association is brief. In 1903 the Electric Vehicle Company secured from George B. Selden patent rights to his invention, on which he had received a patent in 1895 from the United States Patent Office. Concurrent with this transfer was formed an association known as the Manufacturers' Mutual Protective Association, with ten members, agreeing to act concertedly as regards the patent. They had recognized the validity of this patent and were anxious to pay such tribute to the inventor as he deserved. These ten, with the Electric Vehicle Company, were the charter members of the licensed association. The object of the Association, aside from protecting its members in their patent rights, was the development in the industry.

It was not the aim of the Association, as some have endeavored to point out, to cramp the industry in any form, but, on the other hand, it has tried through the co-operative methods of its members to further the industry and conserve the interest of the public, to promote confidence in trade by carefully discriminating against the manufacturer of an unmerited product, to prevent the sale and importation of cars that were not only a detriment to the industry, but to the dealer and user alike, and to forestall the flooding of the market with a cheaply constructed car to be forced on the often non-discriminating buying public. At the time of the organization one of the officers expressed himself as follows, which thoroughly demonstrates the position taken and the attempt to conserve the interest of the public as well as the legitimate manufacturer and dealer:

"It is not the intention to make the Association a 'close corporation.' On the contrary, its money will be expended and the efforts of its officers put forth to further the best interests of the automobile business and prevent abuses. It will be our object to improve the standard of the American automobile and to see that purchasers get full value for their money by putting a check upon any 'wildcat' or get-rich-quick promotions. There is noticeable even now a tendency on the part of irresponsible persons to copy devices which established makers have spent thousands of dollars to perfect, and to assemble in the end a trashy article that sells on looks and will not give satisfaction. There is a tendency on the part of men having small machine shops to put up flimsy engines and carriage bodies and dispose of them, which they are now enabled to do because of the demand for automobiles exceeding the supply. This sort of business the Association can and will stop. It will not try to shut out reputable and established manufacturers, who build a reliable vehicle; it will license all such, but it will license no unreliable upstarts. In this way the Association will protect the public and be a boon to all purchasers of gasoline automobiles."

GRACEFUL MOORISH TOWER THAT SURMOUNTS SHOW.

To carry out the proposed ideas of the Association, its first step was the establishment of several departments or branches, the first inaugurated being the Mechanical branch. The organization of the Mechanical branch may be considered not only the most important step taken by the Licensed Association, but the action stands pre-eminent in the whole automobile industry. The two things accomplished by the branch which are especially significant to the user are the increased quality in construction and the standardization of parts.

Mechanical Branch.

The branch numbers nearly 100 engineers and factory superintendents, all of whom have had years of experience in the manufacture of gas engines for road locomotives. The members meet once or twice a month for the discussion of the best means of automobile construction and development. Without doubt, the open and frank talks on specific mechanical subjects at these meetings are productive of results that otherwise could not be obtained. At first these meetings were somewhat constrained, but it soon developed that the other fellow had some ideas that were worth knowing.

There is no branch of any manufacturing industry that requires quite so much experimentation and as many tests as that of the automobile. Recognizing the fact that owing to the expensive experiments and tests necessary and that the lack of time often prohibited the individual manufacturer from making the many researches, a mechanical branch was established at Hartford, under the direction of an expert metallurgist. The laboratory is equipped with the latest testing machines, and extensive experiments and tests on engines, metals, oils, tires, and, in fact, in all parts not thoroughly developed in automobile construction, are continually going on. The association recognized that a car constructed of material scientifically correct was necessary if the confidence of the public was to be gained. Standards for various metals to be used in specific parts, which after repeated experiments were found to be correct, were adopted. Specifications for metals were compiled and the use of these specifications resulted in a stronger and more elastic steel being made. The co-operation of the American steel manufacturers was sought and received, the steel makers being ready to furnish a better grade of material if it could be made of uniform specifications and in quantities which would permit of better grades. Heretofore the grade of steel used by foreign manufacturers was considered superior to the American make, but it may be unreservedly said that, through the specifications adopted by the Association, from a point of material used now, the American product equals, and in some cases is a higher grade than, that now used by many foreign manufacturers.

The other elements of standardization can be termed a boon to the user. The adoption of the A. L. A. M. screw standard is recognized as one of the most important steps taken in the automobile industry to avoid the annoying trifles that often cause so much trouble to the user. Every driver of a machine knows what it means to be stranded by the stripping of a nut or bolt and the additional aggravation by finding when he reaches a repair shop that the desired article is useless on account of the varied pitch of the thread or the size of head of a nut. Uniformity, not only in screws and bolts, but in spark plugs, will facilitate the work of any automobile owner.

Many subjects have been discussed by the branch which have a decided bearing on the future methods of automobile construction. Subjects under discussion are carburetion, engine vibration, oils, shock absorbers, detachable and interchangeable tires and rims, piston rings, ball bearings, elimination of noise and the use of alcohol as a fuel. The subject of alcohol is at present receiving the immediate attention of the test committee and some interesting reports are expected at the January meeting, scheduled for Tuesday and Wednesday of show week.

Traffic Department.

Another department of particular interest, not only to the manufacturers but to the users, is the Traffic branch. It is generally known that the transportation of automobiles has become one of the chief sources of revenue to the railroads to-day. The department has been instrumental through its manager in obtaining better rates on nearly all classes of automobile traffic.

It suggests and assists in the routing, not only of the product of its members, in such a way that better rates are obtained, but it facilitates the handling of the product, insuring in many cases a safer and quicker delivery. Reduced rates on parts and many reclassifications of benefit both to the manufacturer and railroads is the result of the untiring efforts of the department. The adoption by the railroads of suitable box cars with large side doors is a feature that must not be overlooked. Heretofore the side door of the ordinary box car was too small to admit of an entirely assembled machine, and it was found necessary to take the automobile apart for transportation, and in many cases to the detriment of the machine, as it could not be put together at its destination with the same skill as that at the factory, with the natural result that the user, as well as the dealer, did not get the full benefit of the factories' experts.

A SWISS GUARD.

In this spick and span manner the Garden attendants will be faultlessly dressed.

Agency Department.

The Agency department of the association is an important factor in the selling end of the industry. By terms of the license agreement, manufacturers are not allowed to market their product through any dealer handling unlicensed cars and thereby aiding or abetting the manufacture or sale of cars manufactured by infringers of the Selden patent. Through the work of this department violations which necessarily would be a detriment to the industry as a whole have been avoided and the manufacturer and user alike benefit by the guarantee of the quality of the dealer. The department has been instrumental in arbitrating many small controversies of its members and helping to secure reliable men for all branches of the industry. Records of cars manufactured, sold and used, not only by the association members but by other manufacturers, are kept, which will prove a most important document upon the decision of the pending suits.

The work of the association has been progressing rapidly, endeavoring in every way to direct and guide the industry along a sound and conservative path and, through the merits of the cars produced under its standards, point out to the nondiscerning buyer the cars that have come to stay. Aside from retaining the public's confidence in the industry by the manufacture of a meritorious product, it has relentlessly endeavored to protect the buyer from being "bitten" by what some one has very rightly called the "fly by night" importers and mushroom manufacturers. Like every new industry, as soon as a certain amount of popularity has been attained, every Tom, Dick and Harry thinks he is qualified to be a manufacturer, not taking into consideration the lack of experience and, in many cases, the lack of substantial backing. A few experimental cars are made, exhibited and finally unloaded on the unsuspecting buyer, who afterwards, as a rule, will do all the experimenting on the car, in an unsuccessful endeavor to make it do the work required of it; and so with the importer who, with a model to take orders, often unloads a cheaply constructed car and returns home, leaving the purchaser to alleviate his thoughts by condemning the industry as a whole.

Some interesting statistics prepared by the association show to some extent what might be the result if action was deemed unnecessary. In the past five years it is shown that 367 corporations and individuals have incorporated or organized for the purpose of the manufacture or importation of automobiles who have been notified of their infringement of the Selden patient. Of these 367 it is found that there remain in the business, actually making, exhibiting or advertising, only 111, showing the number who have ceased to be 218; the balance constituting importers, largely partnerships and individuals, doing small business, totals 38. Of these importers the total number ceased are 15, leaving 23 still in business. When it is considered that the leading American makers constitute the licensed group, all of whom have been in the business for years, and that the 32 members produce 81 per cent. of the output while 60 manufacturers of unlicensed cars produce 11 per cent., what will become of the 73 manufacturers producing only 8 per cent.?

In the meantime it must not be forgotten that the basic Selden patent is behind the Association of Licensed Automobile Manufacturers, and while part of the association was aiming for a "car perfectum," the prosecution of the suits against the infringers of the patent has not abated. As said in a recent issue of a motor paper, the attitude of the association and its attorneys has not been to try the case in the newspapers, but through the proper channels provided by the United States patent laws. However, a régime of the court proceedings of this already famous case may be of interest, especially at this time, owing to the proximity of a final decision in the proceedings. In 1879 Selden filed specifications and applied for a patent on what the patent office considered the pioneer invention of a gas engine for road or horseless carriage use. In 1895 the patent was granted the inventor. In the Commissioner of Patents' annual report in the *Patent Office Gazette* for May 12, 1896, the attitude of the patent office is clearly defined: "Selden in 1895 received a patent, November 5, No. 549,160, which may be considered the pioneer invention in the application of the compression gas engine for road or horseless carriage use." At the time many of the manufacturers of gasoline automobiles recognized not only the validity of the patent, but elected to acknowledge the genius of the pioneer of the courageous prosecution of a new art.

In 1900 suit was brought against the Buffalo Gasoline Motor Company for infringement of the patent, resulting in Judge Hazen's decree in sustaining the patent and holding that the defendants had infringed. The same year the Winton Motor Carriage Company was prosecuted for infringement; Judge Coxe overruled the demurrer of the defendants with an opinion most favorable to the patent. Suit was brought against the Automobile Ford Carriage Company and the Raulitz Automobile Company, the former in 1900 and the latter in 1901, resulting in the complainants being granted perpetual injunctions and accountings. In 1903 suit was filed against the Ford Motor Company, as manufacturer, John Wanamaker and C. A. Dueer as dealers, and O. J. Gude as user, for infringement. These are the so-called test cases upon which a decision is being awaited with some intrepidation by those whose beliefs have not led them to recognize a monopoly granted by the United States Patent Office. That a decree is expected soon is generally understood, for the last witness of the complainants is nearing the end of cross-examination, after which, with suitable time for the preparation of briefs and arguments, the case will be presented for trial in the United States Courts having jurisdiction over same.

FATHER NEPTUNE'S KINDLY FACE ADORNS THE FOUNTAIN'S BASE.

TREND OF DESIGN THAT WILL BE REVEALED

By C. B. HAYWARD.

JUST what the automobile of 1907 is to be like, is something that will serve to attract thousands of people to Madison Square Garden during the coming week. Even at this late day there is the usual crop of ante-show prophecies, those hardy annuals about automobiles being vastly cheaper, and the arrival of the "poor man's" car, that make their appearance as faithfully at this time as does the picture of the interior of a German toy factory just before Christmas. In view of the present widespread state of education concerning things automobile that prevails, it is hardly probable that many people are still deceived by talk of this kind, which for the most part has been dropped by all except the most poorly informed disseminators of alleged news. Suffice it to say that all who go to the show looking for the cheap car, or the automobile that sells for next to nothing, and which can be maintained for nothing at all, are bound to be disappointed to a greater extent than ever before, for prices, instead of declining, have risen. It is not merely that American makers are turning out bigger cars; they are manufacturing better cars, better not alone in design, but better by far where material is concerned, and materials of the quality now employed are costly. For that reason the cars of 1907 will come higher than their predecessors in many instances, but they will in turn represent a higher value for the money than has been offered the purchaser in the past.

Very Few Radical Departures to Be Shown.

Where novelties are concerned, probably the most radical thing to be staged will be the gasoline-electric chassis of the Electric Vehicle Company. It represents one of the many expedients adopted as a stepping stone toward the "gearless" car, which is the aim of so many designers, and though it is an old story abroad, numerous experiments having been made in this direction and a car actually placed on the market during the past year, this is the first car of its type to see the light on this side of the Atlantic. Its appearance is not merely tentative; its builders are showing it, not as a curiosity to attract attention, but to take orders for duplicates of it, for it has only been uncovered to the public after eighteen months of constant experimenting and trials under actual service conditions in order that any defect of design or construction in the slightest detail would be certain to manifest itself. Not until this was established beyond a doubt did its builders decide to place it on the market, so that the chassis which will be placed on view represents the successful culmination of their labors.

Another vehicle that is bound to attract considerable attention of a favorable nature is the "waterless" fire engine. It is not, technically speaking, a fire engine, but more in the nature of an auxiliary fire wagon which has been used by the Springfield, Mass., fire department during the past half year with telling effect. Strictly speaking, it is not a commercial vehicle in any sense of the word, though on the other hand it can hardly be termed a pleasure car. It is a 40-horsepower Knox "waterless" touring chassis, upon which a body specially adapted to the purpose has been mounted, and its speed and lightness, combined with a generous carrying capacity, have proved its most valuable attributes. Its appearance at the show has far more significance than that of being merely an exhibit that is somewhat out of the ordinary and hence a drawing card for the curious; it presages the dawn of an era when all fire apparatus will be motor propelled and as such represents a type that will have many followers in years to come.

Where both motor and vehicle design generally are concerned it will be necessary, as has come to be usual during the past two or three shows, to look for those refinements of detail to which improvements and alterations are now largely confined. That is, with the exception of one or two instances of revolutionary changes in motor design such as that of the Pope-Toledo 50-horsepower car, which represents a totally new departure from standards hitherto adhered to by the makers of the latter. Conforming to what is considered as an advanced form of construction, the valves are placed in the head, in this case at an angle, and though the opposite disposition has been retained, but a single camshaft and set of cams is employed, the valves being operated by means of walking-beams actuated by pushed rods which are moved in turn by cams cut with a profile that raises the rod in order to actuate one valve and permits it to drop under the tension of a spring to operate the other. Though slow in gaining recognition, the influence of this form of valve placing has been gaining ground.

The principle of offsetting the cylinders from the center of the crankcase, though as old as the automobile motor itself, as it was a feature of one of Daimler's first V type motors, is something that has again come in for consideration. It has been adopted in the case of the Thomas 40-horsepower car, which will make its début at the Garden show, though it is already quite well known where the public is concerned, having been on the road to the extent of quite a number of cars during the past few months. The amount of offsetting in this case is one inch; in the Northern, 3-4 inch. The new Winton 40-horsepower car, which is the heaviest car ever turned out by this house, also embodies the same principle.

Multiple Disk Clutch Has Gained Ground.

Another trend that has developed strength to a very considerable extent during the year intervening since the last show is the adoption of the multiple disk clutch. This will be found on a larger number of cars than ever before, and the slow but steady growth it has had would seem to be indicative of lasting popularity with both the designer and the owner of cars thus equipped. The selective type of change speed gear has likewise found more favor than previously and now outnumbers the straight or progressive sliding type, while the same is true of the propeller shaft drive as compared with the side chain type, the use of the former becoming more and more general and on cars of higher powers than has hitherto been the case, refinements of design and improved construction having made it possible to overcome most of the defects primarily urged against this form of drive. On the other hand, the advocates of the side chain drive have awakened to what appears to be its chief, if not only, drawback, that of constant wear and noise due to its exposure to the flying mud and grit of the road, and have accordingly undertaken to encase the side chains, an example of this being found in the Lozier.

The controversy over the relative merits of the four and six-cylindered types of motors, which is still smoldering, has served to keep interest in this question at a high point, though the lack of new adherents during the past year would seem to favor the upholders of the four, as the Pierce Great Arrow, which made its first appearance in the Glidden Tour, is the only addition. This, together with the Stevens-Duryea in two models and the Franklin air-cooled six-cylinder car, will constitute the showing of this type. The *pièce de resistance* in this field will be the Hewitt eight-cylindered car, rated at 60 horsepower, which marks the extreme development that multiplication of the cylinders has attained on this side of the Atlantic. Its presence at the Hewitt stand will be more striking owing to the fact that the only other type exhibited by the same maker will be a car of the single cylinder type equipped with a touring body. Brakes have also come in for considerable attention, though here, as in other things, improvement is to be looked for in detail.

This tabular presentation of the show will be studied with great interest, for it tells much and quickly.

PRINCIPAL DETAILS OF AMERICAN CARS AT MADISON SQUARE GARDEN

JANUARY 12-19, 1907.

COSTING LESS THAN $1,000

Car	Price	Power	No. Cylinders	Seats	Clutch	Change Speed Gear	Drive	Wheelbase	Weight	Tires
Orient, Model BR	$400	4	1	2	Friction	Friction, 5	Double chain	80″	750	26 x 2½
Model ER	475	4	1	2	Friction	Friction, 5	Double chain	73″	650	26 x 2½
Model ET	525	4	1	4	Friction	Friction, 5	Double chain.	77″	750	26 x 2½
Oldsmobile	650	7	1	2 or 4	Disc	Planetary, 2..	Single chain.	66″	.....	28 x 3
Cadillac, Runabout. .	800	10	1	2	Disc	Planetary, 2..	Single chain.	.....	.....	30 x 3
Touring	950	10	1	4	Disc	Planetary, 2 .	Single chain.	76″	.....	30 x 3½
Hewitt	1,000	10	1	4	Disc	Planetary, 2..	Single chain.	72″	.....	30 x 3½

COSTING FROM $1,150 TO $1,500

Buick, Runabout	$1,150	22	2	2	Cone	Planetary, 2..	Chain	89″	1,750	30 x 3½
Touring Car	1,250	22	2	5	Cone	Planetary, 2..	Chain	89″	1,850	30 x 3½
Waltham Orient, Runabout	1,250	16	4	2	Cone	Sliding, 3	Shaft	82″	1,300	30 x 3½
Autocar, Runabout	1,200	14	2	3	Flywheel Disc	Sliding, 3	Shaft	81″	1,500	30 x 3

COSTING FROM $1,500 TO $1,900

Northern, Touring Car	$1,700	20	2	5	Exp. Ring	Planetary, 2..	Shaft	106″	2,100	32 x 3½
Waltham-Orient, Touring Car	1,750	20	4	.....	.....	.....	.....	.....	.....	.....
Franklin, Runabout	1,800	12	4	2	Disc	Sliding, 3	Shaft	90″	1,250	30 x 3—30 x 3½
Touring Car.	1,850	12	4	4	Disc	Sliding, 3	Shaft	90″	1,450	30 x 3—30 x 3½
Elmore, Runabout or Touring Car	1,750	24	3	2–5	Exp. Ring	Selective, 3	Shaft	102″	1,750	32 x 3½
Pope Tribune	1,750	16–20	4	2	Invert'd Cone	Sliding, 3	Shaft	95″	1,600	32 x 3½

COSTING FROM $2,000 TO $2,500

Buick—										
Runab't, Mod. "K"	$2,000	25–30	2	5	Disc	Planetary, 2..	Shaft	106½″	1,800	32 x 4
Touring, Mod. "A"	2,000	25–30	4	5	Disc	Planetary, 2..	Shaft	102½″	2,000	32 x 4
Runab't, Mod. "S"	2,200	25–30	2	5	Disc	Sliding, 3	Shaft	106½″	1,800	32 x 4
Touring, Mod. "D"	2,200	25–30	4	5	Disc	Sliding, 3	Shaft	102½″	2,000	32 x 4
Cadillac—Touring Car or Runabout	2,000	20	4	5	Cone	Selective, 3	Shaft	100″	.....	32 x 3½
Waltham-Orient— Touring Car	2,100	20	4	5	Cone	Sliding, 3	Shaft	96″	1,850	32 x 3½

COSTING FROM $2,500 TO $3,000

Corbin	$2,500	24	4	5	Cone	Selective, 3	Shaft	108″	2,200	34 x 3½—34 x 4
Cadillac	2,500	30	4	5	Disc	Planetary, 3..	Shaft	102″	.....	32 x 4
Stevens-Duryea	2,500	20	4	5	Disc	Sliding, 3	Shaft	90	1,850	30 x 3½
Elmore	4,500	35	4	5–7	Exp. Ring	Selective, 3	Shaft	109″	2,200	34 x 4
Winton	2,500	30	4	5	Individual	Ind. Clutch.	Shaft	104″	.....	34 x 4
Haynes	2,500	30	4	5	Constricting Band	Selective, 3	Shaft	102″	2,250	32 x 4
Knox	2,500	25–30	4	5	Cone	Selective, 3	Shaft	102″	2,250	32 x 4
Thomas—Runabout and Touring Car	2,750	40	4	3 or 5	Cone	Selective, 3	Shaft	112″	2,500	32 x 4
Oldsmobile—Runab't or Touring Car	2,750	35–40	4	3 or 5	Cone	Selective, 3	Shaft	106½″	2,500	34 x 3½—34 x 4
Franklin	2,800	20	4	5	Disc	Sliding, 3	Shaft	105″	1,900	34 x 3 —34 x 3½
Locomobile	2,800	20	4	5	Cone	Sliding, 3	Double chain	96″	.....	32 x 4
Autocar	3,000	30	4	5	Flywheel Disc	Sliding, 3	Shaft	112″	2,500	32 x 4
Columbia	3,000	24–28	4	5	Cone	Sliding, 3	Shaft	109″	2,350	32 x 3½—32 x 4
Pope-Hartford	2,750	25–30	4	5	Invert'd Cone	Sliding, 3	Shaft	102″	2,400	32 x 4

PRINCIPAL DETAILS OF AMERICAN CARS AT MADISON SQUARE GARDEN

JANUARY 12-19, 1907.

COSTING FROM $3,500 TO $4,500

Car	Price	Power	No Cyl's	Seats	Clutch	Change Speed Gear	Drive	Wheel-base	Weight	Tires
Haynes	$3,500	50	4	7	Cons'g Band.	Selective.....	Shaft.....	110″	2,950	.....
Winton	3,500	40	4	7	Disc.....	Selective, 4...	Shaft.....	112″	.....	34 x 4½
Northern	3,500	50	4	7	Comp. Air...	Sliding, 3....	Shaft.....	119″	3,300	34 x 4½
Thomas—Runabout or Touring Car	4,000	60	4	7	Disc.....	Selective, 4...	Double chain	118″	3,200	36 x 4 —36 x 5
Peerless	4 000	30	4	5	Internal Expand. Band	Selective.....	Shaft.....	109″	2,800	34 x 4 —34 x 4½
Franklin	4,000	30	6	7	Disc.....	Sliding, 3....	Shaft.....	127″	2,400	36 x 3½—36 x 4
Royal Tourist	4,000	45	4	7	Cone.....	Sliding.....	Shaft.....	114″	.....	34 x 4½
Knox	4,000	35–40	4	7	Cone.....	Selective.....	Double chain	112″	2,800	34 x 4½
Pierce-Great Arrow	4,000	30	4	5	.....	Sliding.....	Shaft.....	112″	2,900	34 x 4 —34 x 4½
Packard—Runabout	4,200	30	4	3	Int'l Exp'g...	Sliding, 3....	Shaft.....	108″	2,550	34 x 3½—34 x 4
and Touring Car				3–5				122″	2,900	34 x 4 —34 x 4½
Matheson—Runabout	4,250	35	4	3	Disc.....	Selective.....	Double chain	117″	3,200	36 x 4 —36 x 4½
Touring Car	4,500	.....	.....	7	.....	.....	.....		3,400	.....
Thomas—Demi-Limousine	4,500	60	4	7	Disc.....	Selective, 4...	Double chain	118″	3,500	36 x 4 —36 x 5
Columbia	4,500	40–45	4	7	Cone.....	Selective, 4...	Double chain	117″	,3400	36 x 4 —36 x 4½
Stevens-Duryea	3,500	35	6	5	Disc.....	Sliding.....	Shaft.....	114″	2,300	34 x 4
Stearns—Touring	4,500	30–60*	4	5	Int'l Exp'g...	Selective, 4...	Double chain	120″	3,200	36 x 4 —36 x 4½
Pullman	4,750	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pope-Toledo	4,250	50	4	7	Disc.....	Selective, 4...	Double chain	115″	2,900	36 x 3½—36 x 4½
Apperson	4,750	50–55	4	7	Comp. Band.	Selective, 4...	Double chain	116″	3,000	36 x 4 —36 x 4½
Studebaker	4,000	30	4	.....	Cone.....	Sliding, 3....	Shaft.....	104″	.....	34 x 4
Apperson	4,200	40–45	4	.....	Comp. Band.	Selective, 4...	Double chain	116″	2,900	34 x 4 —34 x 4½

COSTING FROM $5,000 TO $6,500

Car	Price	Power	No Cyl's	Seats	Clutch	Change Speed Gear	Drive	Wheel-base	Weight	Tires
Matheson—Runabout	$5,000	50	4	3	Disc.....	Selective.....	Double chain.	123″	3,250	36 x 4 —36 x 5
Thomas—Limousine	5,000	60	4	7	Disc.....	Selective, 4...	Double chain.	118″	3,800	36 x 4 —36 x 5
Pierce-Great Arrow	5,000	45	4	7	.....	Sliding.....	Shaft.....	124″	3,400	36 x 4 —36 x 5
Royal Tourist—Lim.	5,000	45	4	7	Cone.....	Sliding.....	Shaft.....	114″	.....	34 x 4½
Knox—Limousine	5,000	35–40	4	6	Cone.....	Selective.....	Double chain	112″	3,200	34 x 4½
Apperson—Runabout	5,000	50	4	3	Comp'n Band	Selective, 4...	Double chain	100″	1,800	34 x 3½—34 x 4
Lozier—Runabout and Touring Car	5,000	40	4	2	Disc.....	Selective, 4...	Double chain	115″	2,675	.....
				7				117″	3,050	.....
Thomas—Landaulet	5,200	60	4	7	Disc.....	Selective, 4...	Double chain	118″	3,800	36 x 4 —36 x 5
Matheson—Touring Car	5,500	50	4	7	Disc.....	Selective.....	Double chain	123″	3,400	36 x 4 —36 x 5
Simplex*	5,600	30–35	4	5–7	Rev. Cone....	Sliding, 4....	D'ble chain	106″	2,300	910 x 90
								111″		920 x 120mm.
								114″		
Simplex—Runabout	5,760	50	4	2	Cone.....	Selective, 4...	Double chain	124″	2,250	915 x 105
										935 x 135
Lozier—Limousine	6,000	40	4	7	Disc.....	Selective, 4...	Double chain	117″	3,680	36 x 4 —36 x 4½
Stevens-Duryea	6,000	50	6	7	Disc.....	Sliding, 3....	Shaft.....	122″	3,500	36 x 4 —36 x 5
Pierce-Great Arrow	6,500	65	6	7	Cone.....	Sliding.....	Shaft.....	135″	3,900	36 x 4½—36 x 5
Matheson—Landaulet and Limousine	6,500	50	4	7	Disc.....	Selective.....	Double chain	123″	3,450	36 x 4 —36 x 5
Packard—Limousine	5,500	30	4	7	Int'l Exp'd'g.	Sliding, 3....	Shaft.....	122″	3,300	34 x 4 —34 x 4½
Peerless	5,000	45	4	7	Int'l Exp'd'g.	Selective, 4...	Shaft.....	114″	3,300	34 x 4 —34 x 4½
Walter	.....	40	4	7	Disc or Cone	D'ble Slid.	Shaft.....	124″	3,200	36 x 4— 36 x 5
Walter	5,500	50	4	7	Disc or Cone.	D'ble Slid. 4..	Shaft.....	124″	3,600	36 x 4 —36 x 5
Hewitt	5,500	50–60	8	7	Disc.....	Planetary 2..	Shaft.....	112″	.....	85 x 105

*NOTE.—In order to avoid confusion by unnecessarily encumbering the table, the progressive or straight sliding type of change speed gear is merely designated as "sliding," and the selective type as "selective" only, the following numeral in each case representing the number of forward speeds, it being understood that there is always a reverse. For the same reason a multiple disc type of clutch, being designated as "disc," though on light runabouts with planetary change speed gear a single disc is usually employed. Where two sets of figures are given under tires, the smaller are those of the front wheels and the larger those of the rear. Where a runabout and touring car of the same make are listed together, the specifications given apply to both, except where separate figures are given, in which case the upper applies to the runabout.

*Simplex. Price of 30–35 horsepower touring varies according to cost of body, that given being the minimum. Chassis alone sells at $4,050. Wheelbases given are optional.

*Stearns. 30–60 horsepower. This is explained by the fact that a special system of carburetion has been made a feature of the motor. It consists of a small and a large carbureter fed from a common float chamber. On the small one the motor develops 30 horsepower, the large not coming into service until the small one is fully open. Control is by the usual throttle lever.

DETAILS OF IMPORTED CARS SHOWN AT MADISON SQUARE GARDEN

Car	Price	Power	No. Cyls.	Seats	Clutch	Change Speed Gear	Drive	Wheel-base	Weight	Tires
Darracq	$6,500	20–32	4	7	Cone	Special Sliding, 3	Shaft	120″	2,800	880 x 120 mm.
Renault (Chassis)	5,500	30	4	7	Reverse Cone	Sliding, 4.. W	Shaft	118″	2,300	875 x 105 880 x 120 mm
Isotta Fraschini—Runabout	7,250	35	4	7	Disc	Selective, 4	Double chain	120″	1,870	910 x 90 mm. 920 x 120 mm
Panhard (Chassis)	7,800	35	4	7	Disc	Sliding, 4	Double chain	124″		920 x 120
Runabout	8,050									
Rochet Schneider		16–20	4		Cone	Sliding, 3	Shaft	111″		815 x 105
Rochet Schneider		16–20	4		Int'l Exp'd'g.	Sliding, 4	Double chain	118″		920 x 120
Rochet Schneider	7,000	40–50	4		Int'l Exp'd'g.	Sliding, 4	Double chain	122″		920 x 120 935 x 135
Renault		14–20	4		Reverse Cone	Sliding	Shaft	107½″		875 x 105
Renault		10–14	4		Reverse Cone	Sliding	Shaft	98½″		800 x 95
Renault	5,750	35–45	4		Reverse Cone	Sliding, 4	Shaft	118″		875 x 105 880 x 120
Hotchkiss—Runabout	9,250	50	6	3	Cone	Selective, 4	Shaft	132″	2,650	875 x 105 880 x 120
Fiat	7,500	35	4	5	Disc	Selective, 4	Double chain	136″		910 x 90 920 x 120
Isotta Fraschini—Runabout	10,250	50–65	4	3	Disc	Selective, 4	Double chain.	132″		910 x 90 920 x 120
Hotchkiss	6,750	35	4		Cone	Selective, 4	Shaft	118″	2,350 (Chas's)	875 x 105 880 x 120
Panhard		15	4	4	Cone	Sliding, 4	Double chain	111″		880 x 120
Panhard		24	4	4	Disc	Sliding, 4	Double chain			
Panhard	8,050	50	6	7	Disc	Sliding, 4	Double chain	134″		920 x 120
Darracq—Touring	8,000	40–60	4	7	Cone	Selective, 3	Shaft	125″	3,000	935 x 135
Clement-Bayard	10,750	60	4	7	Disc	Selective, 4	Double chain	130″		36 x 4½—36 x 5½
English Daimler	6,500	30	4	6	Cone	Selective, 4	Double chain	114″	2,850	920 x 120
English Daimler	7,500	35	4	6	Cone	Selective, 4	Double chain	114″	2,850	880 x 120
English Daimler	8,500	45	4	7	Cone	Selective, 4	Double chain	114″	2,850	895 x 135
De Dietrich	10,500	40	4	7	Metallic	Selective, 4	Double chain	128″		820 x 100 925 x 120
C. G. V	6,500	35	4	7	Cone	Sliding, 4	Double chain	120″		920 x 120
C. G. V		14–20	4	4	Cone	Sliding	Shaft	110″		815 x 105
Clement-Bayard		24–32	4	4	Disc	Selective	Shaft	118″		880 x 120
C. G. V		20–24	4	4 or 7	Cone	Selective	Double chain	112½		880 x 120
Clement-Bayard		30–40	4	5	Disc	Selective				880 x 120
C. G. V		75	4	5 or 7	Cone	Selective	Double chain	118″		880 x 120
De Dietrich		60	4	5	Metallic	Selective	Double chain	130″		935 x 135
Rochet Schneider		70	4		Metallic	Selective	Double chain	129″		920 x 120
Hotchkiss		20–30	4		Cone	Selective	Shaft	118″	2,250 (Chas's)	875 x 105 880 x 120

AMERICAN ELECTRIC VEHICLES SHOWN AT MADISON SQUARE GARDEN

Car	Price	H.P.	Wheelbase	Weight	Tires	Battery	Mileage
Cantono—Fore-Brougham Extension, Straight Front	$3,500	5	90″	3,000	2½″ Solid		
Babcock—Stanhope	1,650	2½	63″	1,900	Solid	40 Cells	50
Babcock—Roadster	1,400	2½	78″	1,500	32 x 3½″ Pneumatic	24 Cells	100
Babcock—Victoria	1,600	2½	78″	1,550	32 x 3″ Pneumatic	24 Cells	75–100
Cantono—Fore-Landaulet	3,500	5	96″	3,000		44 Cells	40
Columbus-Stanhope	1,600		69″	1,600	30 x 3½″ Pneumatic	24 Cells	40–75
Columbus—Coupe	1,900		69″	1,600	30 x 3½″ Pneumatic	24 Cells	40–75
Columbus—Surrey	2,500		89″	2,200	34 x 4″ Pneumatic	24 Cells	60
Columbus—Surrey	3,000		89″	2,400	34 x 4½″ Pneumatic	24 Cells	50
Pope-Waverley—Vict.-Phae-ton	1,600		68″		30 x 3½″ Pneumatic	30 Cells	
Pope-Waverley—Stanhope	1,400		70″		30 x 3½″ Pneumatic	30 Cells	
Pope-Waverley—Spec. Stanhope	2,000		76″		32 x 3½″ Pneumatic	30 Cells	
Pope-Waverley—Station Wagon	2,250		77½″		30 x 4″ Pneumatic	41 Cells	
Baker—Runabout	1,800	2	76″	1,500	30 x 3″ Pneumatic	24 Cells	80
Baker—Brougham or Landaulet	4,000	6	98″	4,000	34 x 4—34 x 4½″	40 Cells	40–60
Baker—Victoria	3,000	2	90″	2,200	36 x 4—36 x 4½″	24 Cells	40
Baker—Stanhope	1,600	1	68″	1,050	30 x 3″	12 Cells	40
E. V Co.—Victoria-Phaeton	1,500				Pneumatic	24 Cells	
E. V. Co.—Victoria	4,000				Pneumatic	44 Cells	
E. V. Co.—Brougham	4,000				Pneumatic	44 Cells	
E. V. Co.—Landaulet	4,000				Pneumatic	44 Cells	
E. V. Co.—Hansom	4,000				Pneumatic	44 Cells	
Studebaker—Runabout	1,135		67″	1,650	30 x 3″ Pneumatic	24 Cells	
Studebaker—Stanhope	1,275		67″	1,565	Pneumatic	24 Cells	
Studebaker—Victoria-Phaeton	1,775		68″	2,000	Pneumatic	28 Cells	
Studebaker—Coupe	2.225		68″	2,200	Pneumatic		
Studebaker—Special Stanhope	1,675		74″	2,250	Pneumatic	36 Cells	
Studebaker—Surrey	2,985					28 Cells	

SPECIFICATIONS AND DETAILS OF

MOTORS OF AMERICAN CARS AT GARDEN SHOW

JANUARY 12-19, 1907.

Car	H. P.	No. Cyl.	Drive	Normal Speed	Cast	Bearings	Valve Placing	Cam-shafts	Valve Operation	Governor	Cooling	Radiator	Pump	Lubrication	Ignition
Orient	4	1	3½ x 4½	1,800	Sep. Head	Phos. Br'ze	One Side	...	Direct (auto inlet)	No.	Air			Mechanical	H. T.
Oldsmobile	7	1	5 x 6	.....	.....	Babbitt	One Side	...	Direct	No.	Water	Tubular		Gravity	H. T.
Hewitt	10	1	4¾ x 6	.....	.....	Plain	.....	...	.....	...	Water	.....	.....	.....	H. T.
Cadillac	10	1	5 x 5	.....	Ind. Jacket	Babbitt & Bronze	.....	...	Eccentric	No.	Water	Fin. Tubular	Centrifugal	Mechanical	H. T.
Autocar	14–14	2	4 x 4	1,000	Opposed	Bronze	One Side	1	Inlet-rocker Arm, Ex. Dir.	No.	Water	Fin. Tubular	Special	Mechan. 3	H. T.
Waltham Orient	16	4	3½ x 4½	1,000	Independent	Alum. Alloy	One Side	1	Direct	No.	Air	.....	.....	Exh. Pres. 1	H. T.
Buick	22	2	4½ x 5	.....	Opposed	Plain	Head	...	Direct	No.	Water	Tubular	Gear	Mechanical	H. T.
Franklin	12	4	3½ x 3½	.....	Independent	Plain	Opposite	1	R'ker Arms	Yes	Air	.....	.....	Mechan. 4	H. T.
Waltham Orient	20	4	4 x 4½	900	Independent	Alum. Alloy	One Side	1	Direct	No.	Air	.....	.....	Exh. Pres. 1	H. T.
Northern	20	2	5½ x 5½	.....	Opposed	Nickel Bab	One Side	1	Direct	No.	Water	Tubular	Rot. Eccen.	Mechan. 1	H. T.
Cadillac	20	4	4 x 4½	.....	Ind. Jackets	Babbitt & Bronze	One Side	1	Direct	Yes	Water	Tubular	Helical	Mechanical	H. T.
Franklin	20	4	4 x 4	.....	Independent	Plain	Opposite	1	R'ker Arms	Yes	Air	.....	.....	Mechan. 4	H. T.
Stevens-Duryea	20	4	3¾ x 4½	800	Independent	Plain	One Side	1	Direct	No.	Water	Cellular	Centrifugal	Mechanical	H. T.
Locomobile	20	4	3¾ x 4½	1,000	Pairs	Babbitt & St'l Alloy	Opposite	2	Direct	Yes	Water	Cellular	Centrifugal	Mechan. 3	L. T., Spec. Mag.
Corbin	24	4	4½ x 4½	1,200	Independent	Parson's Wh. Bress	Head	1	R'ker Arms	No.	Air	.....	.....	Mechan. 7	H. T.
Elmore	24	3	4½ x 4	800	Independent	Babbitt & Bronze	Two Cycle	...	Two Cycle	No.	Water	Cellular	Gear	Mechan. 5	H. T.
Columbia	24–28	4	4 x 4½	900	Pairs	Babbitt & Bronze	One Side	1	Direct	Yes	Water	Cellular	Centrifugal	Circ'l'tg Sys.	L. T.
Knox	25–30	4	4½ x 4½	1,200	Independent	Babbitt & Bronze	Head	1	R'ker Arms	No.	Air	.....	.....	Mechanical	H. T.
Autocar	30	4	4½ x 4½	1,000	Independent	Bronze	One Side	1	Inlet-r'ker Arm Exh. Direct	No.	Water	Tubular	Special	Mechanical	H. T.
Cadillac	30	4	4½ x 5	.....	Independent	Babbit and Bronze	One Side	1	Direct	Yes	Water	Honeycomb	Gear	Mechanical	H. T.
Winton	30	4	4½ x 5	1,000	Pairs	Plain	One Side	1	Direct	Yes Air	Water	Tubular	Centrifugal	Mechan. 8	H. T.
Haynes	30	4	4½ x 5	1,000	Pairs	Roller	Opposite	2	Direct	No.	Water	Honeycomb	Rotary	Mechan. 6	H. T.
Packard	30	4	5 x 5½	.....	Pairs	.....	Opposite	2	Direct	Yes	Water	Tubular	Gear	Sin. Plunger P'mp Cir. System.	H. T. Eism & Ac.
Locomobile	35	4	4½ x 5½	1,000	Pairs	Babbitt & Alloy St'l.	Opposite	2	Direct	Yes	Water	Cellular	Centrifugal	Mechanical	L. T., Spec.
Elmore	35	4	4½ x 4	800	Independent	Babbitt & Bronze	Two Cycle	...	Two Cycle	No.	Water	Cellular	Gear	Mechan. 6	H. T.
Oldsmobile	35–40	4	4½ x 4½	750	Pairs	Parson's Wh. Brass	One Side	1	Direct	No.	Water	Tubular	Gear	Gear Pump, Circ. Sys.	H. T.
Knox	35–40	4	4½ x 5½	1,000	Independent	Babbitt & Bronze	Head	1	R'ker Arms	No.	Air	.....	.....	Pressure	H. T.
Thomas	40	4	4½ x 5	800	Pairs	Comp. Al'y	One Side	1	Direct	No.	Water	Tubular	Centrifugal	Mechanical	H. T.
Peerless	30	4	4½ x 5½	.....	Pairs	Plain	Opposite	2	Direct	Yes	Water	Tubular	Gear	Mechan. 6	H. T.
Stearns	30–60	4	5½ x 5½	.....	Pairs	D.W.F. B'll	One Side	1	Direct	No	Water	Tubular	Rotary	Mechanical	H. T. Mag. and Ac.
Pope-Tribune	16–20	4	.....	.....	Pairs	Plain	One Side	1	Direct	No.	Water	Planetic	.....	Mechanical	H. T.
Pope-Hartford	25–30	4	.....	.....	Pairs	.....	Head	1	R'ker Arms	No.	Water	Planetic	.....	Mechanical	H. T.
Buick	25–30	4	4½ x 4½	.....	.....	.....	One Side	1	Direct	No.	Water	Tubular	.....	Mechanical	H. T.
Stevens-Duryea	35	6	3¾ x 4½	1,000	.....	Plain	One Side	1	Direct	.....	Water	Cellular	Centrifugal	Mechanical	H. T.
Winton	40	4	5 x 5	1,000	Pairs	Plain	One Side	1	Direct	No.	Water	Tubular	Centrifugal	Mechan. 8	H. T.
Haynes	50	4	5½ x 6	900	Independent	Roller	Opposite	2	Direct	No.	Water	Honeycomb	Rotary	Mechan. 6	H. T. Mag. and Ac.
Pierce Great Arrow	45	4	5 x 5½	900	Independent	.....	Opposite	2	Direct	No.	Water	Cellular	Centrifugal	Spec. Pump Circ. Sys.	H. T. Bosch Mag. & Ac.
Matheson	50	4	5½ x 6	600	Independent	Bronze	Head	1	R'ker Arms	No.	Water	Honeycomb	Centrifugal	Mechan. 10	L. T. Mag.
Northern	50	4	5 x 5½	.....	One Piece	Wh. Brass	Head	1	R'ker Arms	No.	Water	Tubular	Cams'ft G'rs	Float-feed 2	H. T.
Matheson	35	4	4½ x 6	600	Independent	Bronze	Head	1	R'ker Arms	No.	Water	Honeycomb	Centrifugal	Mechanical	L. T.
Peerless	45	4	5½ x 5½	.....	Pairs	.....	Opposite	2	Direct	Yes	Water	Tubular	Gear	Mechanical	H. T.
Columbia	40–45	4	5 x 5	900	Pairs	Babbitt & Bronze	One Side	1	Direct	Yes	Water	Cellular	Gear	Mechan. 7	H. T.
Matheson	50	4	5½ x 6	600	Independent	Bronze	Head	1	R'ker Arms	No.	Water	Honeycomb	Centrifugal	Mechan. 10	L. T.
Simplex	30–35	4	4½ x 5½	.....	Pairs	Bronze and Babbitt	Opposite	2	Direct	Yes	Water	Honeycomb	Centrifugal	Pressure	H. T. Bosch Mag.
Simplex	50	4	5⅞ x 5⅞	.....	Pairs	Bronze and Babbitt	Opposite	2	Direct	Yes	Water	Honeycomb	Centrifugal	Mechanical	H. T. Bosch Mag.
Pierce Great Arrow	30	4	4½ x 4½	900	Independent	.....	Opposite	2	Direct	No.	Water	Cellular	Centrifugal	Spec. Pump Circ. Sys.	H. T. Bosch Mag. & Ac.
Thomas	60	4	5½ x 5½	.....	Independent	Spec. Alloy	Opposite	2	Direct	No.	Water	Cellular	Gear	Mechanical	H. T. Bosch Mag., Atw. Kent G.
Franklin	30	6	4 x 4	.....	Independent	.....	Opposite	1	R'ker Arms	Yes	Air	.....	.....	Mechan. 6	H. T.
Royal Tourist	45	4	5½ x 5½	.....	Pairs	Spec. Alloy	Opposite	2	Direct	No.	Water	Cellular	Rotary	Mechanical	H. T. Bosch Mag. & Ac.
Pierce Great Arrow	65	6	5 x 5½	.....	Independent	.....	Opposite	2	Direct	No.	Water	Cellular	Centrifugal	Spec. Pump Circ. Sys.	H. T. Bosch Mag. & Ac.
Lozier	40	4	4⅞ x 5½	900	Pairs	Bronze	Opposite	2	Direct	Yes	Water	Honeycomb	Centrifugal	Pressure	H. T.
Lozier	60	4	5½ x 6	900	Pairs	Bronze	Opposite	2	Direct	Yes	Water	Honeycomb	Centrifugal	Pressure	H. T.
Stevens-Duryea	50	6	4½ x 5½	1,000	Independent	.....	One Side	1	Direct	.....	Water	Cellular	Centrifugal	Mechanical	H. T.
Studebaker	30–35	4	4½ x 5½	.....	Pairs	.....	.....	...	Direct	No.	Water	Cellular	.....	Mechanical	L. T. Mag.
Peerless	45	4	5½ x 5½	.....	Pairs	.....	Opposite	2	Direct	Yes	Water	Tubular	Gear	Mechanical	H. T.
Apperson	50	4	5½ x 5	.....	Independent	.....	Opposite	2	Direct	No.	Water	Tubular	Piston	Mechanical	6 H. T. Mag. and Ac.
Walter	40	4	5 x 5½	900	Pairs	.....	Head and Side	1	Direct	.....	Water	Honeycomb	.....	.....	H. T. Mag. and Ac.
Walter	50	4	5½x6	900	Pairs	.....	Head and Side	1	Direct	.....	Water	Honeycomb	.....	.....	H. T. Eism. Mag. & Ac.
Hewitt	50-60	8		900	Independent	Plain	One Side	1	Direct	No.	Water	Cellular	Centrifugal	Mechan. 14	H. T. Bosch

SPECIFICATIONS AND DETAILS OF MOTORS OF FOREIGN CARS

MADISON SQUARE GARDEN.

Car	H.P.	No. Cyl.	Motor Dimensions	Normal Speed	Cast	Bearings	Valve-placing	Camsht's	Valve Operation	Governor	Radiator	Pump	Lubrication	Ignition
Renault	10–14	4	75 x 120	.....	Pairs.	Plain	Op'site	2	Direct	No.	Special	Ther.-Siphon	Pump Circ'n.	H. T. Mag.
Renault	14–20	4	90 x 120	.....	Pairs.	Plain	Op'site	2	Direct	No.	Special	Ther.-Siphon	Pump Circ'n.	H. T. Mag.
Panhard	15	4	90 x 130	.....	Indp't	Plain	Op'site	2	Direct	No.	Honeycomb	Pump	Mechanical	H.T. Eisemann Mag.
C. G. V.	14–20	4	95 x 102	.....	1 Piece	Plain	Op'site	2	Direct	No.	Honeycomb	Centrifugal	Pressure	H. T. EisemannMag.
Panhard	24–30	4	110 x 140	.....	Indp't	Plain	Op'site	2	Direct	No.	Honeycomb	Centrifugal	Mechanical	H.T. EisemannMag.
Renault	20–30	4	100 x 140	.....	Pairs.	Plain	One Side	1	Direct	No.	Special	Ther-Siphon	Pump Circ'n.	H. T. Mag.
Darracq	20–32	4	119 x 120	.....	Pairs.	W'te Metal	One side	1	R'k'r Arms	No.	Gilled Tube	Gear	Mechanical	L. T. Bosch Mag. H. T. Accum.
Fiat	20	4	.....	.....	Pairs.	Plain	Op'site	2	Direct	No.	Honeycomb	Centrifugal	Automatic	H. T. Bosch Mag.
Renault	34–45	4	100 x 140	.....	Pairs.	Ball	One side	1	Direct	No.	.....	.....	.....	H.T. Mag.
Panhard	50	4	160 x 175	.....	Indp't	Ball	Op'site	2	Direct	No.	Honeycomb	Centrifugal	Mechanical	H. T. EisemannMag.
Fiat	60	6	.....	.....	Pairs.	Ball	Op'site	2	Direct	No.	Honeycomb	Centrifugal	Automatic	H. T. Bosch Mag.
Isotta Fraschini	35	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fiat	35	4	125 x 150	.....	Pairs.	.....	Op'site	2	Direct	No.	Honeycomb	Centrifugal	Automatic	L. T. Mag.
Panhard	35	4	130 x 140	.....	Indp't	Plain	Op'site	2	Direct	No.	Honeycomb	Centrifugal	Mechanical	H.T. Eisemann Mag.
Hotchkiss	35	4	125 x 125	1,000	Pairs.	Ball	Op'site	2	Direct	No.	Honeycomb	Centrifugal	Mechanical, 3	H.T. Eisemann Mag.
Hotchkiss	50	6	.....	1,000	Pairs.	Ball	Op'site	2	Direct	No.	Honeycomb	Centrifugal	Mechanical	H.T. Eisemann Mag.
Isotta Fraschini	50–65	4	145 x 160	.....	Pairs.	Ball	Op'site	2	Direct	No.	Honeycomb	Centrifugal	Pressure	H. T. Bosch Mag.
Darracq	40–60	4	130 x130	.....	Pairs.	W'te Metal	One side	1	R'k'r Arms	No.	Gilled Tube	Gear	Mechanical	L. T. Bosch Mag. H. T. Accum.
Rochet-Schneider	16–20	4	100 x 120	900	Pairs.	Ball	Op'site	2	Direct	No.	Tubular	Rotary	Gear Pump	H. T. Mag.
Rochet-Schneider	30–35	4	120 x 160	800	Pairs.	Ball	Op'site	2	Direct	Yes	Tubular	Rotary	Gear Pumps	L. T. Mag.
Rochet-Schneider	40–50	4	140 x 180	700	Pairs.	Ball	Op'site	2	Direct	Yes	Tubular	Rotary	Gear Pump	L. T. Mag.
C. G. V.	35	4	121 x 152	.....	1 Piece	Ball	Op'site	2	Direct	No.	Honeycomb	Centrifugal	Pump Circ'n.	H. T. Mag. and Accum.
Clement-Bayard	60	4	.....	.....	Indp't	Ball	Op'site	2	Direct	Yes	Honeycomb	Centrifugal	Pressure	L. T. and H. T. Z.
C. G. V.	75	4	140 x 159	.....	1 Piece	Ball	Op'site	2	Direct	No.	Honeycomb	Centrifugal	Pump Circ'n.	.....
Clement-Bayard	24–32	4	105 x 140	.....	Indp't	Ball	Op'site	2	Direct	Yes	Honeycomb	Centrifugal	Pump Circ'n.	H. T. Mag.
C. G. V.	20–24	4	111 x 133	.....	1 Piece	Ball	Op'site	2	Direct	No.	Tubular	Centrifugal	Pump Circ'n.	L.T. Mag and Ac'm.
Clement-Bayard	30–40	4	95 x 130	.....	Indp't	Ball	Op'site	2	Direct	Yes	Honeycomb	.....	Pressure	H. T. Mag.
De Dietrich	40	4	130 x 160	.....	Pairs.	Ball	One side	1	Direct	No.	Honeycomb	Centrifugal	Mechanical	L. T. Mag.
De Dietrich	60	4	146 x 180	.....	Pairs.	Ball	One side	1	Direct	No.	Honeycomb	Centrifugal	Mechanical	L. T. Mag.
Rochet-Schneider	70	4	160 x 160	.....	Pairs.	Ball	Op'site	2	Direct	Yes	Tubular	Rotary	Gear Pump	L. T. Mag.
Hotchkiss	30–30	4	115 x 120	1,000	Pairs.	Ball	Op'site	2	Direct	No.	Honeycomb	Centrifugal	Mechanical	H. T. EisemannMag.
English Daimler	35	4	140 x 130	.....	Pairs.	.....	One side	1	Direct	....	Tubular	.....	Gravity	H. T. Mag.
English Daimler	45	4	150 x 150	.....	Pairs.	.....	One side	1	Direct	....	Tubular	.....	Gravity	H. T. Mag.
English Daimler	30	4	130 x 150	.....	Pairs.	.....	One side	1	Direct	....	Tubular	.....	Gravity	H. T. Mag.

NOTE: Carbureters.—This head has been omitted altogether, principally from the fact that it would be impossible to set forth briefly the differences in the various types used by different makers, beside which the majority describe their carbureters as "automatic" or merely as "float feed" or again the "best," none of which convey any great amount of information.

Ignition.—Except where a magneto is mentioned, it is to be understood that the current is supplied by accumulators, one or two sets being employed, though on the lighter cars dry cells are employed as a reserve. Where the numeral 2 follows the statement of the ignition it indicates that two entirely independent systems are employed. "H. T." and "L.T." refer to high and low tension.

General.—Under the head of valve operation "direct" means with the usual push rods and tappets, and "rocker arms" by overhead arms or walking-beam. Under lubrication "mechanical" refers to a motor-operated type of force feed oiler, the numeral following giving the number of independent leads. The numeral following the type of change speed gear, such as "Selective 4," indicates the number of speeds forward. Under engine bearings "plain" is merely stated in distinction to ball bearings where the maker has not supplied more definite data, such as bronze, babbitt, alloy, etc.

DETAILS OF AMERICAN GASOLINE COMMERCIAL VEHICLES

MADISON SQUARE GARDEN.

Car	H.P.	No. Cylinders	Cooling	Transmission	Drive	Tires	Wheelbase	Type	Carrying Capacity
Winton	40	4	Water	Selective	Shaft	36 x 4" / 36 x 7" Twin — Solid	13 ft.	Heavy Truck	10,000 lbs.
Knox	40	4	Air	Selective	Shaft	.....	.....	Aux. Fire Dep't Wagon	Special Des'n.
Knox	40	4	Air	Selective	Shaft	.....	.....	Truck	5,000 lbs.
Knox	40	4	Air	Selective	Shaft	.....	.....	Truck	6,000 lbs.
Olds	16–18	2	Water	Planetary	Chain	34 x 4" Solid	96"	Light Truck or 'Bus	3,000 lbs.
Franklin	12	4	Air	Sliding	Worm	30 x 3½" Sold	90"	Light Truck	2,000 lbs.
Cadillac	10	1	Water	Planetary	Chain	30 x 3" Pneumatic	76"	Delivery	1,000 lbs.

DETAILS OF AMERICAN ELECTRIC COMMERCIAL VEHICLES

MADISON SQUARE GARDEN.

Car	Motors	Cells in Battery	Drive	Tires	Type	Capacity
Pope-Waverley	1	42	Chain	32 x 3—36 x 3"	Delivery	1,000 lbs.
Pope-Waverley	1	40	Chain	30 x 3"	Light Truck	1,000 lbs.
Pope-Waverley	2	42	Chain	36 x 3—42 x 3"	Light Truck	2,000 lbs.
Pope-Waverley	2	42	Chain	36 x 6—42 x 6"	Heavy Truck	10,000 lbs.
McCrea Motor Truck Co	1	22	Chain	36 x 2½"	Delivery	1,000 lbs.
General Vehicle Co	1	44	Chain	32 x 3"	Delivery	1,000 lbs.
General Vehicle Co	1	44	Chain	36 x 4"	Light Truck	2,000 lbs.
General Vehicle Co	2	44	Chain	36 x 6"	Heavy Truck	7,000 lbs.
General Vehicle Co	2	44	Chain	36 x 7—36 x 48"	Heavy Truck	10,000 lbs.
Studebaker	2	40	Chain	.....	'Bus	14 pass.

PREDETERMINATION OF MAXIMUM MOTOR POWER*

By R. ARNOUX, Vice-President Technical Committee, Automobile Club of France.

ACCURATE predetermination of the maximum power of an internal combustion motor of given dimensions is a subject of great interest for the organizers of great racing events, both for cars and motor boats, as well as for designers. For the engineer and the manufacturer this interest is represented by the knowledge he wishes to have of the maximum output, which, by means of the usual conventional modifications of design, he can hope to obtain from a motor of certain dimensions, or one having a cylinder of a given cubic capacity. For the organizers of racing events, the subject is of interest, in that it provides a means of equalizing the chances of the various competitors in the same event by giving a basis for a handicapping system.

As this power is at once the result of the pressure developed by the explosion of the volume of the cylinder in which the explosion takes place and the angular velocity of the moving parts, it would appear impossible, *a priori*, to establish any formula permitting the determination of this maixmum power output with a degree of precision sufficient for practical purposes, where only the cylinder volume or one of its dimensions is known. But this apparent impossibility disappears when the philosophy of the internal combustion motor is examined more at length, as we shall do here. Internal combustion motors all possess a common characteristic, that of drawing from the surrounding atmosphere, of which the pressure, and in consequence the density, are constantly varying, the oxygen necessary for their operation. On the other hand, it is not the bulk of the air thus drawn in that produces combustion, and in consequence the complete utilization of the combustible gaseous mixture, but an invariable proportion between it and a given amount of fuel. This, in the case of ordinary petroleum spirit, or gasoline, is one part gasoline to 15 parts air by weight, that is, 12 cubic liters of air to one gram of gasoline, this proportion permitting of the disengagement of the maximum amount of heat obtainable by the most efficient utilization of this combustible.

This established, we may take up the subject of determining as accurately as possible the exact influence of the different factors that limit the maximum power output of the internal combustion motor. It is well known that the energy developed by a gaseous mass, in passing from the volume v to volume V, is equal to the integrated value of the product of the pressure p, by the corresponding elementary variation dv of the volume. That is to say:

$$\int_v^V p\,dv$$

In explosion motors, this quantity of energy, that is, indicated power, is valued by a diagram traced in rectangular coördinates, across which the abscissæ are proportional to the course of the piston, and the ordinates to the corresponding pressure. The spaces on this diagram are determined with the aid of a planimeter, and if these spaces are given by the instrument in square millimeters, for example, it will suffice to divide by the length of the maximum abscissa, measured in millimeters, to obtain the mean value of the Pm of the pressure. This mean pressure is that which must be constantly exerted on the head of the piston in order that it may develop the same amount of energy. Since v designates the volume at the end of compression, that is, the initial volume of the gaseous mixture; and V, the volume at the end of the stroke, there is as the value of the preceding integral between the limits v and V:

$$\int_v^V p\,dv = (V - v)\,P_m \quad (2)$$

Now the volume $(V\text{-}v)$ is none other than that generated by the piston during the total length of its travel, that is to say, the *cylindrical* volume, and it will be plain that the amount of energy developed by each cylinder will be equivalent to the product of its volume by its mean pressure.

The Interesting Phenomenon of Expansion.

This last relation is interesting in that it tends to foster experiment resulting in the reduction to a minimum of the initial volume v of the explosive mixture and in consequence of the use of the highest degrees of compression possible short of causing spontaneous combustion, in order to extract from a given quantity of gas the maximum amount of energy available. A slight digression may be made here from the question of how to determine the maximum power that a motor of a given cylinder capacity is capable of developing, to recall what we said in 1903 at the Second International Automobile Congress, in our report on the subject of ignition, relative to the employment of high compression. The explanation of this growth of power with the compression, as illustrated in practice with gas engines, is very simple. It is, in fact, the phenomenon that permits us to *transform into work* all, or, more generally speaking, a part of the heat contained in an elastic fluid. This phenomenon is that of expansion. A gaseous fluid is a spring that may be tightened to advantage in heating it, and which cools upon expansion after having produced its energy. The fall in temperature, and in consequence the partial disappearance of the heat as the result of the expansion, represent the means employed by nature to pay for the work created. Regarding the quantity of heat transformed into work, this is regulated by the degree of expansion that is permitted it. The greater the degree to which it is allowed to expand, the greater the amount of energy that can be extracted from it, but in carrying the expansion to excess the variation of the initial volume of the gas during the stroke is made to alter within extreme limits. It will be quite evident that this extreme variation of volume cannot be realized in motors in actual service without the employment of an excessively high compression, that is, by further reducing, as far as practical, the volume of the gas to a point where it is subjected to a degree of heat equivalent to almost instantaneous combustion (explosion), or progressive combustion (Diesel motor), in order to convert a minimum initial value to one as high as possible. It it well to observe that the degree of expansion does not depend at all on the relative amount of travel of the piston (contrary to the generally prevailing opinion), but solely on the relation that the initial volume (at the end of the compression stroke) bears to the final volume of the gaseous mixture.

Some Advantages of High Compression.

The advantage, from a thermodynamic point of view, of the employment of high compression, or, to put it in another form, an extreme variation of volume of a gaseous fluid, may be readily calculated in a case where both the compression and the expansion are adiabatic, by which the amount that they can accomplish in a very short time can better be calculated, this being the case of the automobile motor with its extremely high angular velocity. Under these conditions, there is obtained, as an expression of the energy developed, the equation in which:

$$W = Eq\left[1 - \left(\frac{p_1}{p_2}\right)^{\frac{k-1}{k}}\right] = Eq\left[1 - \left(\frac{v}{V}\right)^{k-1}\right] \quad (3)$$

In this E is the mechanical equivalent of the calories, q the *total* quantity of heat generated by the explosion, p_1 and V, p_2 and v, the pressures and volumes of the gaseous mass at the beginning and the termination of the phase of compression, and k the ratio $\frac{C}{c}$ of the thermic capacities at constant pressure and volume, a ratio that does not vary sensibly, notwithstanding that it is subject to an increase of capacities with the temperature.

*Translated from "Bulletin Officiel de la Commission Technique."

These two equations show that the *thermodynamic product*

$$\frac{W}{Eq} = 1 - \left(\frac{p_1}{p_2}\right)^{\frac{k-1}{k}} = 1 - \left(\frac{v}{V}\right)^{k-1} \quad (4)$$

will be much greater, if the compression p_2 of the mixture is carried further, or its initial volume v correspondingly reduced with regard to the volume V at the end of expansion.

Experience has constantly demonstrated the ecnoomy to be gained with high compression, or, to put it in another way, an extreme variation in the volume of the gaseous mixture. In the first Lenoir gas engine the expansion was in the ratio of but 1 to 2, and the fuel consumption amounted to 3,000 liters of illuminating gas per horsepower hour, while in the Catteau motor, experimented with by M. A. Witz in 1903, this was reduced to 368 liters. the expansion or variation of volume being in the ratio of 1 to 10.

Greatly Reduced Fuel Consumption.

The fuel consumption in the case of gasoline motors has followed a similar march of progress, dropping from 1,100 grams per horsepower hour in the case of some of the earlier models in which the ratio of expansion was 1 to 3, to 180 grams of low grade oil in the four-cycle Diesel motor, in which a variation of 12.5 to 1 is attained, corresponding to a compression of 35 atmospheres. In the case of motors in which the carburetion of the charge is effected prior to its entrance to the cylinder, it is evident that carrying the compression to such an extent is not possible by reason of the fact that spontaneous combustion would take place long before such a high value was reached, and this is exactly the factor that limits the quantity of heat that is transformable into energy in this type of motor. But the compression of a gaseous mixture, when carried to such a high value as to render ignition by means of spontaneous combustion practical, presents the double advantage of rendering every mixture explosive, regardless of how poorly it may be carbureted. This fact is one that permits of a rational regulation of the engine, that is, economically, as in the Diesel motor, in which the amount of power developed is regulated by means of the degree of the carburetion of the charge, thus doing away with the necessity of advancing the point of ignition with all its inconveniences, a further advantage being found in the instantaneity of the burning of the mixture under the high compression actually employed in these engines, as revealed by indicator cards.

On the other hand, it is well known that the *density*, or, what amounts to the same thing, the pressure of an explosive mixture, is feeble, while the rate of propagation of the explosive wave is slow. This is such that in mines containing firedamp it has been frequently established by the miners that the speed of the propagation of the flame does not exceed the pace of a man walking slowly, which is less than 3.6 kilometers per hour, or about 1 meter per second. MM. Mallard and Le Chatelier have observed the same thing under conditions that are comparable in every way with those found in the explosive motor, that the speed of the propagation of the flame does not exceed .25 meter per second in weak mixtures. If, on the contrary, the explosive mixture is compressed to a point three times higher than that at which spontaneous combustion occurs, the least rise in temperature, and in consequence in pressure, is sufficient to fire it *simultaneously in every part.*

Speed of Flame Propagation.

The experiments of MM. Vielle and Berthelot have demonstrated that in such a case the explosive wave may attain a speed of 2,000 meters per second, or almost six times more than is possible in the open air. To resume, it may again be stated that, in augmenting the compression, the thermodynamic product of the motor is increased, and, as we have already seen, the necessity for advancing the point of ignition with all its inconveniences is totally done away with. Besides which, there is reduced just at the moment when it is most necessary that action of the walls of the combustion chamber, which designers have really been striving to augment by placing the inlet and exhaust valves in chambers or pockets, the surface of the walls of which is nearly double that exposed to the action of the incandescent gas, where the valves are located in the head of the cylinder—an expedient that has already been adopted by several progressive designers.

We have already seen that the amount of energy developed by the explosion of a mass of gas during the total piston travel is equal to the product of the mean pressure developed by the variation of the volume of that mass. But in practice it is not sufficient merely to produce this work; it must be produced in the shortest possible time. It is quite evident, in fact, that a motor running ten or twenty times faster than another will accomplish in that much less *time* the same amount of work, and the rapidity of its work will be ten or twenty times greater.

It will not be amiss to dwell somewhat here, after our colleague, M. Hospitalier, on the distinction between the terms force, work and power—mechanical quantities that are quite distinct, but which are only too often confused to-day, not alone in current conversation but in technical writings. A *force* cannot be utilized industrially, except in as far as it is capable of producing displacement or change of position; of overcoming the resistance which is opposed to it. The product FL of this displacement L by the value F of the force exerted following the displacement is the measure of the work effected. The quotient of this work FL, by the time T employed in its execution, is the measure of the *speed or activity of the work*, or, to perpetuate an expression, the *power* of the motor may be equally well defined and measured by the product of the *force* by the *speed of displacement* at its point of application. If a comparison be permissible, we should say that the *work* is to the *power* as the *task* of effecting it is to the *rate* of its execution of that task, with relation to the time.

The work produced by the explosion motor is essentially *spasmodic*, or *periodic*, the *mean power* P being equal to the quotient of the work of the cylinder divided by the length of the period of its cycle T, which is determined by the formula:

$$P = \frac{(V - v)\, p_m}{T} . \quad (5)$$

Influence of the Time Element.

If we designate by n *the number of cycles effected by the motor in a given unit of time*, a second for example, it is clear that the relation of the unit to the duration T of each cycle is identically the same as that of the relation that the number of cycles n bears to the time unit, as a result of which we have the formula:

$$\frac{1}{T} = \frac{n}{1''} \quad (6)$$

from which the mean power developed by the motor may be defined as equivalent to the *periodic work* by the product of that *work* times its frequence n. This frequence n, with which each cylinder repeats its stroke, may be readily deduced from the angular velocity of the motor. If it be observed that the motor is making ω r.p.m. its speed in turns per second will be equal to ω :60 turns per second, and as each actual cycle of the motor calls for two turns of the crankshaft, the frequence n of the work of each cylinder is equal to $\frac{\omega}{2.60}$ and the power developed is expressed by the formula:

$$P = (V - v) \cdot p_m \cdot \frac{\omega}{2.60}$$

or by

$$P = \frac{\pi D^2}{4} C \cdot p_m \cdot \frac{\omega}{2.60} \quad (7)$$

in which D and C designate respectively the diameter of the piston and its total travel.

The total power developed by an explosion motor of given cylinder dimensions depends, then, upon two variables, the *mean pressure pm*, and the frequence $\frac{\omega}{2.60}$ with which the periodic work is repeated in that cylinder, and this is proportional to the angular velocity of the motor. It is clear that if the mean pressure be

constant the power developed by the motor will be proportional to its angular velocity. But experience has shown that this mean pressure, far from maintaining a constant value, continually decreases in proportion as the speed increases, in such a manner that the product of these two variables, which regulate the power of the motor, passes a maximum. This decrease in mean pressure is in evidence on indicator cards taken of the cycle, and drops as the speed of the motor increases, owing to the decrease of the *couple* or *motor moment*, exercised by the latter, which is equal to that mean pressure as may be readily demonstrated.

If this be designated by n, the product of the motor, or, rather, the relation that the power P', developed at the crankshaft, bears to the *indicated power* P, then we have the equation

$$P' = \eta P$$

The power P' developed at the crankshaft is equal to the product of the work per turn (which is equal to the product of a certain force F applied tangentially at a distance L from the axis of the motor, by the length of the circular path traversed in one turn by its point of application) by the number of turns $\frac{\omega}{60}$ made by the crankshaft per second. This gives us:

$$2\pi L \cdot F \cdot \frac{\omega}{60} = \frac{\pi D^2}{4} C \cdot p_{m_1} \cdot \frac{\omega}{2 \cdot 60} \cdot \eta_1 \qquad (8)$$

or, since the factor ω is common,

$$2\pi L \cdot F = \left(\frac{\pi D^2}{4} C\right) \frac{\eta_1}{2} \cdot p_m \qquad (9)$$

Now the product FL of the force F by the distance L of the axis of rotation measures the value of the couple or motor moment developed, and the formula (9) demonstrates that if the output η of the motor be constant its couple FL, or the *work per turn* $2\pi LF$ is simply proportional to the *mean pressure* pm, or the mean effort $\frac{\pi D^2}{4}$ exerted against the head of the piston, and consequently to the *work*

$$\frac{\pi D^2}{4} C \cdot p_m$$

developed by the cylinder.

It will suffice to determine experimentally, for example, the relation between the work per turn of the motor crankshaft to its angular velocity, to learn what relation the work of the cylinder bears to that same angular velocity. This relation is illustrated by the curve M′ M″ M‴ of the chart Fig. 1, taken in 1903, on a motor capable of developing 18 horsepower, and published by us at that time in *La Vie Automobile*. The experimental determination of this curve is very simply effected by varying the pressure of the brake and in measuring the angular velocity in turns per minute, for example, corresponding to the value of each change of brake pressure. It is clear that the resulting curve reaches its maximum value corresponding to the *resistant moment* opposed by the brake shortly after the minimum speed that the motor can maintain is reached, and this *moment* constantly diminishes thereafter in proportion to the increase in angular velocity. Now, as the formula (8) demonstrates that there is a fixed ratio between the value of the *motor moment* and that of the *work of the cylinder*, which is evident, all things being otherwise equal and proportional to the quantity, or, more exactly speaking, to the mass of the gaseous mixture drawn in for each explosion, it is at once evident that the motor *inspires* less and less in each cylinder in proportion to the increase in the angular velocity. The charges, sufficiently voluminous at the start, become less and less copious.

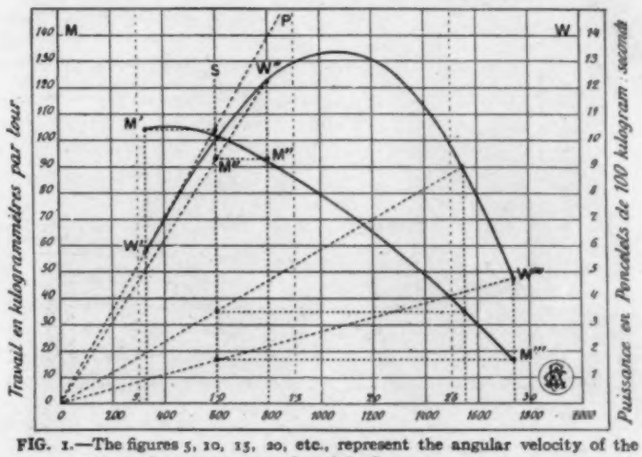


FIG. 1.—The figures 5, 10, 15, 20, etc., represent the angular velocity of the motor in turns per second, and the figures 0, 200, 400, etc., in turns per minute.

And what does this indicate? Simply this, that if the *depression* produced by the downward travel of the piston increases with its linear speed, and in consequence with the angular velocity of the motor, on the contrary, the *duration of the refilling* of the combustion chamber is inversely proportional to that same angular velocity. Now, if the weight, or, more accurately speaking, the mass of the explosive mixture aspired were the *direct* function of the speed of displacement of the piston and *inversely* of the duration of the inspiration, it could easily be conceded that the mean mechanical effort set in motion by the power cylinder reached a maximum at a certain value of the angular velocity, which is the same as that corresponding to the maximum power developed by the motor at its crankshaft.

This last may be easily deduced by an extremely simple *graphic calculation* of the curve of the moment or motor couple. In fact, we have already seen above (equation (8)) that the power P', developed by the motor at its crankshaft, is equal to the product of the *work per turn* by the frequence $\frac{\omega}{60}$ or $\frac{10\omega}{600}$

$$2\pi L \cdot F \cdot \frac{\omega}{60} = P' \qquad (10)$$

which gives us the equation:

$$\frac{P'}{2\pi L \cdot F} = \frac{10\,\omega}{600} \qquad (11)$$

If we raise to the point having for abscissa 600, the ordinate 600 S, and project on that ordinate all the points of the curve M′ M″, so that M″ corresponds to the abscissa of 800 turns per minute, and then join the origin at the point projected M″, by a straight line terminating at W″ on the ordinate 800 M″, the triangles o(800) W″ and o(600) M″ will give the proportion

$$\frac{W''\ (800)}{M''_1\ (600)} = \frac{o\ (800)}{o\ (600)}$$

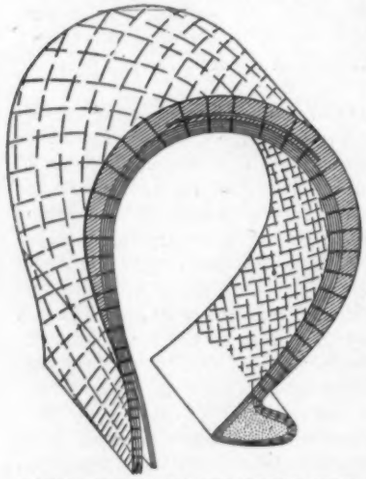
which is none other than the proportion (11). Moreover W″ is a point of the *characteristic* curve of the power developed by the motor at its crankshaft. This was also determined by the points W′ W″ W‴ of the *power characteristic* of the motor experimented on. It will be seen that this power increases proportionately to the angular velocity by the small values of the latter; then it passes a maximum, after which they decrease constantly. It will be equally evident that if the mass of the explosive mixture were constant and independent of the speed, the same would be true of the couple or the moment, and the power developed, of which the curve would be represented by a direct line, such as OP, would be proportional to the angular velocity of the motor.

(To be continued.)

Now it is the "air hog" who is causing trouble in England instead of the time-honored road animal of the same breed. He is the balloonist, who, with dragging anchor or other appurtenances peculiar to aerial navigation, does damage to windows, hothouses, fences, shrubbery and lawns, and does not pay up for the damage he causes the suburban resident. It is already proposed to make balloonists carry numbers on their airships, so that they may be identified.

A NEW FORM OF TIRE CONSTRUCTION.

With a view to overcoming the tendency to disintegrate inherent in some forms of pneumatic tires, this being caused by the bending or crinkling of the tire body where the latter flattens against the road surface due to the weight of the load, F. A. Bragg, of Springfield, Mass., has invented a form of tire construction in which the various layers of material are mechanically bound together in addition to the vulcanization, this being done subsequently in the ordinary manner. As the bend in the tire wall mentioned is constantly being shifted circumferentially by the rotation of the wheel, every part of the fabric layers and their binding element is subjected to a great strain, eventually resulting in the separation of the various constituent layers of the tire body due to the working of one upon the other, or the tendency toward such movement set up by the strain in question.



CROSS SECTION OF THE BRAGG TIRE.

To overcome this defect by means of a binding auxiliary to the cementing effect of the rubber in order to reduce the relative movement of the layers of fabric to a minimum, the body of the Bragg tire is quilted by sewing, as will be apparent from the accompanying illustration, which pictures its construction. This is done before the vulcanizing process is carried out and the thread or cord employed is previously permeated with a substance which, when the tire is finished, causes the former to become permanently adherent to the tire body. The quilting serves to reduce the area in which movement of one layer of fabric may take place relative to another to the space located between adjacent lines of stitching, no less than 16,000 stitches being required to complete a single outer shoe.

THE SOCIETY OF AUTOMOBILE ENGINEERS.

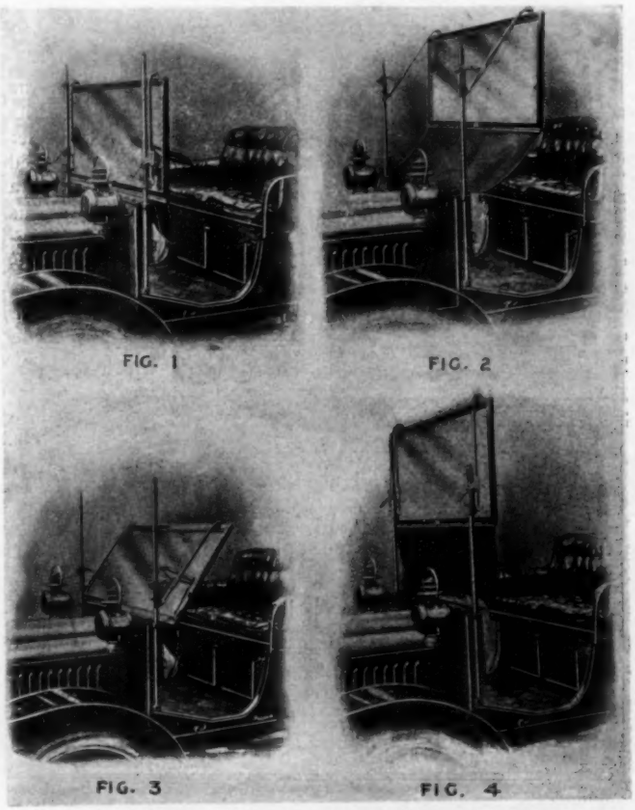
The annual meeting and dinner of the Society of Automobile Engineers will be held at the New Grand Hotel, Broadway and Thirty-first street, Thursday, January 17. The meeting will be held at 2 P. M., and in addition to the election of officers and a general discussion the following papers will be read: "Simplicity," by Henry Ford; "Some Facts Pertaining to Electric Ignition," by Henri G. Chartain; "Some Features of Construction," by Thos. J. Fay; "Alcohol," by Thos. J. White; "Change Gears and Their Journals," by Henry Hess. The dinner is scheduled for 7:30 P.M., and members may invite guests.

A TECHNICAL NEWS BUREAU ESTABLISHED.

A bureau has been established in New York City to supply articles on the design, construction, sale and use of automobiles to the automobile and popular press. Arrangements have been made with a corps of experienced writers to prepare such matter upon demand, so that the requirements of an editor in any phase of the subject can be filled at short notice. Among these writers may be mentioned Herbert L. Towle, W. P. Stephens, Joseph Tracy, Harold H. Brown and Thomas L. White. Arrangements have also been made with Edwin Levick and Nathan Lazarnick to supply photographs especially taken to accompany the manuscripts. The organization is known as the Technical Press Bureau, and offices have been opened at 25 west Forty-second street. Management of the bureau is in the hands of Harry W. Perry, for the past five years associate editor of THE AUTOMOBILE and more recently associated with H. F. Donaldson, publisher of the *Commercial Vehicle*. Connection with the latter periodical is still retained. Associated with him is Howard Greene, who for several years has been a writer on mechanical subjects on the staff of the *Horseless Age* and THE AUTOMOBILE, having concluded his connection with the latter with the close of the year. Although a specialty is to be made of automobile subjects, it is planned to furnish special articles from time to time for technical or class papers devoted to other lines.

AN IMPROVED FRENCH WINDSHIELD.

PARIS, Dec. 20.—Since its first appearance about a year ago the swinging windshield invented by M. Huillier has had immense success. Briefly, it consisted of a glass shield hinged at its upper edge to two upright side stays curved upward at their extremity, and a waterproof leather apron uniting its lower edge to the outside of the dashboard. Its disadvantage—a disadvantage common to the ordinary type of windshield—was that it could not be raised or lowered or put out of use when not required. The inventor has improved on the first model, as will be seen by the illustrations herewith. A metal upright stay is attached to each side of the dashboard, and on it slides a sector bearing a lighter stay to which the shield is hinged, and provided with a thumb-screw by which it can be retained at any desired height. By means of the sectors the sheild can be placed at any distance from the driver, or when it is lowered can be maintained at any angle. A leather apron connects the lower edge of the shield with the dashboard. *Fig.* 1 shows the screen lowered; *Fig.* 2 illustrates the screen raised to a normal height. In *Fig.* 3 it is lowered and placed at an angle, as it would be used in heavy rain, giving the driver some protection while offering no obstruction to the view; and in *Fig.* 4 the screen is raised as high as possible. A further advantage of the shield is that it can be fitted on any car without special measurement, and in position 2, 3 and 4 it may be used between front and rear seats. The shield is patented.



IMPROVED SWINGING WINDSHIELD, SHOWN AT PARIS SALON.

OPINIONS CONCERNING TWO-CYCLE ENGINES

JUDGING from the varied comment elicited by the article on the two-cycle engine, by C. P. Malcolm, which has been appearing in THE AUTOMOBILE, it is evident that the interest in this type of motor is far more widespread than would appear to be the case to the casual observer, particularly in view of the fact that but one firm has had the courage of its convicitions in this connection where the automobile is concerned. That the two-cycle motor represents the ultimate stage of the evolution of the internal combustion engine, is the firm belief of many authorities whose experience and standing entitles their opinions to considerable weight. Simplicity, with a maximum of power from a minimum of weight, must always be the aim of the designer, as it has been in the past, and there are many who incline to the opinion that the realization of this points in the direction of the perfection of the two-cycle idea and none other. There are those, however, who maintain that two-cycle operation and high speeds are incompatible with a high degree of efficiency and will never be realized in practise. Accordingly they are seeking simplicity in another direction while still retaining the four-cycle principle, in order that a more complete scavenging of the combustion chamber between strokes may be brought about and a higher degree of compression employed, both of these being universally conceded to be among the first essentials of efficient operation. This is the case of Charles E. Duryea, whose letter is appended here, as he is of the opinion that the success of the rotary valve will eliminate the necessity for further employment of the two-cycle principle.

AN EVOLUTION IN AUTO ENGINE BUILDING.

Editor THE AUTOMOBILE:

Since 1899 there has been a steady advance and evolution of building engines for automobile use. At that time the Otto type of engine was the accepted type for automobile service, principally because of its being a high-speed engine, which allowed of using a similar engine utilizing this high speed and then gearing back by the means of chains to the driving axle. This type of engine was used exclusively for automobiles until 1899, when the Elmore Manufacturing Company, of Clyde, O., entered the field with a motor of the two-cycle type. This type of motor was used almost exclusively for marine purposes, and was always supposed to be a motor of very limited speed; in fact, the speed was so low that it was not well adapted for automobile work, and therefore did not have much consideration. The Elmore company, however, seeing the possibilities of the two-cycle motor, decided that it could be improved so as to make it the ideal motor for the automobile.

The first two-cycle engines, in fact nearly all of them in marine use, were of the type using valves in the crankcase, or a great many engines had been made with valves in the head of the cylinder, the same as the four-cycle, but the prevailing type was the one using a check valve in the inlet to the crankcase. The Elmore company soon found that the prevailing type of motor as used for marine purposes was not at all available for automobile purposes, and they began working on the Day, or three-port system. It took considerable experimenting and time to get the engine proportioned so as to produce the results expected, but a steady advance was made until now the evolution is practically complete. For three years past the Elmore motor has been acknowledged to possess all the qualities of the perfected motor for automobile service. It has come up fully to the expectations of its builders' and gas engine experts all over the world predict that it will be the motor of the future.

History has shown that when the limit of progress in one direction is reached, further progress has come through radical departure from these lines. However, evolutions come slow, as it is hard to make a change from one system to another until it has been clearly shown that the evolutionary system is better. In the case of the two-cycle engine this has been shown to everyone who has made a study of the situation; it is only those who are prejudiced in favor of their own system who are still doubtful. The Elmore company has made further advance in the Day type of engine than anyone else. Their product of automobiles is so well and favorably known that comment is unnecessary further than to explain the difference, or rather, similarity, of their motor to the four-cycle type.

It is generally agreed among all mechanical men that simplicity is the point to be obtained. In the two-cycle motor this point has been gained, for not only does it do away with all the complicated parts of the four-cycle engine, but theoretically it doubles the power. This means that not only is the two-cycle engine a great deal more powerful than its prototype, but it is much lighter in weight, and as it does away with most of the troublesome parts of the four-cycle it is consequently more reliable, especially in the hands of the amateur, as there are absolutely no parts that are subject to wear or displacement, even after very long and very hard service.

All history has shown that every evolution in the nature of an improvement is at first ignored, and as it gathers strength and momentum is fought by those whose interests it seems to affect. This has been true of the evolution of the two-cycle. There are probably comparatively few people who know what constitutes the difference between what is called the two-stroke cycle and the four-

(Continued on first column, page 54.)

MR. MALCOLM'S ADDED EXPLANATION.

Editor THE AUTOMOBILE:

I noted W. Fahrenbrink's inquiry No. 507, concerning two-cycle engines, and I think that I might be able to give some additional information that might be of considerable value to him. In designing the ports of a two-cycle engine it is necessary to have the exhaust port as much wider than the inlet port as necessary to permit all of the pressure of the exhaust to escape before the inlet port begins to open. Before the exhaust port begins to open, the burning charge is at a bright red heat, and would ignite any fresh charge that came in contact with it, but, as in compressing a charge before it is ignited, the heat of compression keeps exact pace with the degree of compression, so in discharging the ignited gases the temperature will keep exact pace with the pressure, and the exhaust gases, which were at nearly a white heat before the port began to open, will be black as they are expanded to atmospheric pressure, by being discharged in the open air. If this occurs before the inlet port opens, there will be no danger of back firing into the crankcase. In a cylinder of four or five inches stroke, the inlet port should be 3-8 inch to 1-2 inch wide, and the exhaust port from 5-8 inch to 3-4 inch wide; that is, there should be 1-4 inch lead in the exhaust port.

The bottom of these ports should be on the same vertical plane as the top of the piston when it is on its lower center, and they should extend clear around the circumference of the cylinder, with about one inch bridges to separate the exhaust from the inlet port. There should be about three very thin bridges, say about 1-8 inch thick, across the inlet port, and one, about 1-2 inch wide, across the exhaust port.

The object of extending the ports clear around the cylinder is not only to get the greatest port capacity with the least possible loss of effective piston stroke, but also because that is the only way by which the exhaust gases can be effectually swept from the cylinder by the incoming charge. This construction of ports has contributed more towards making the two-cycle an efficient gas engine than any other one thing.

It is only a few years since the usual, in fact the universal practice, was to make the ports of a six-inch bore cylinder about 2 1-2 inches, or at the farthest 3 inches long, and the charge would be deflected up the inside of the cylinder and over the top and down the exhaust side, and out of the exhaust port, leaving the larger part of the exhaust gases on each side of it undisturbed in the cylinder. If you have thick bridges across the intake port, there will be arches of the exhaust gases, extending across the cylinder from each bridge to the exhaust port, that the incoming charge cannot sweep out ahead of it, because they are shielded by the bridges. It is necessary to have bridges across the ports to prevent the piston rings from springing out into the port and catching, and probably breaking, but 1-16 inch bridge will steady the rings across the port just as well as thicker ones, but 1-8 inch is about as thin as you can bore out the cylinder with and not have the edges crumbled by the cutting tool. The exhaust port bridge, or bridges, should not be so thin, as there is nothing to be gained by it, and they will get hot quicker, being exposed to the hot exhaust gases for an instant, each revolution of the engine. The exhaust port being so much wider than the intake port, the port room that thick bridges take up is not needed for port capacity, but do not put more than one 1-2 inch bridge in unless the bore is over 6 inches.

In designing two-cycle engines the usual practice is to make the crankcase compression space as small as possible in order to get as

(Continued on second column, page 54.)

AN EVOLUTION IN AUTO ENGINE BUILDING.

(Continued from first column, page 53.)

stroke cycle engine. The difference is in the manner of admitting gas to the combustion chamber of the engine. In the four-cycle this is accomplished by a number of very accurately finished valves, which are operated by a complicated system of cams, levers and springs. This system is subject to variation, first in the timing of the valves, on which probably no two builders agree—in fact, experimenting is going on even at this late date to determine just what timing is proper for the valves of a four-cycle engine. Even if the valves are timed right in the first place, they are subject to the variation of the valves corroding as they are exposed to the extremely hot gases of the combustion chamber, and they are also subject to variation from lost motion in levers or cams. These valves perform the service of letting the gas into the cylinders, and also let the gas out of the cylinders, so that one revolution is used for the working stroke or power of the engine, and the next revolution the engine is idle and does no work at all, therefore the four-cycle engine is working only half the time. This idle stroke is a great detriment to the four-cycle engine on account of having to carry a very heavy flywheel to keep the momentum of the engine up while it is doing no work, which, as said above, is one-half the time. As stated above, the two-cycle engine not only does away with the highly sensitive valves and their attendant mechanism, but also has no idle stroke, producing a power stroke at every revolution, even though carrying much less compression, which allows of easier starting and much smoother running, and the two-cycle, by losing this idle stroke, gains infinitely more power, with a smoothness of action that it would take double the number of cylinders of the four-cycle type to produce. This has been acknowledged by builders of the Otto type of engine by the fact that they are multiplying their cylinders in order to overcome these spasmodic impulses and the elimination of the heavy flywheel, but in multiplying the cylinders they also multiply the parts for actuating the valves.

The entire action of the four-cycle having been explained, it will be very easy for even a layman to understand the principle and advantages of the two-cycle as now explained. The piston in the two-cycle engine performs its duty just the same as the piston in a steam engine, which nearly every one understands. In its backward and forward movement it opens and closes the inlet and outlet ports for admitting the gases into the explosion chamber and for letting it out after being burned. It performs this function with an evenness and reliability that is surprising to the oldest steam engineers. As every one knows, the piston of a gas engine, as well as a steam engine, is not subject to wear or displacement, and on this account the longevity of the two-cycle engine cannot be questioned. In fact it has been repeatedly proven in hundreds of cases of actual practice that a two-cycle motor of the best make, even after very long and hard service, will show the same or more power than it did when new. Unfortunately for those who wish to design a two-cycle engine, there is no reliable data in the hands of anyone but those who have had years of experience in the practical making and marketing of this type of engine.

While the Elmore company has been eminently successful in building this type of engine, it was proven by their first experiments that faulty design will entirely nullify all the natural advantages of the two-cycle engine, and that considerable experience must be possessed by the designer to take advantage of its simplicity.

Clyde, O. B. A. BECKER.

DISSENTS FROM MR. MALCOLM'S STATEMENT.

Editor THE AUTOMOBILE:

In Mr. Malcolm's article on the "Development of the Two-Cycle gine, Part II," is a statement that "With the engine running at any speed the valve will not lift, so the only practical way of using this device is to place the valve in a horizontal position"—all this referring to the small momentum valve in the piston head. Where does Mr. Malcolm get his authority for this startling assertion? The combination two-and-four-cycle engines, made in this country by a Chicago concern, were fitted with momentum valves of the type which Mr. Malcolm so emphatically condemns, and, whatever troubles may have been had with their other details, trouble with these valves was not one of them. Also, in the early Daimler V-shaped gasoline engines, which gave most excellent service, piston air valves were regularly used to supply additional air for much the same reason as constitutes the excuse for the auxiliary air admission of the modern compensating carbureter. These valves were not only held by the momentum, but were also held by very stout springs, and it is not on record that there ever was any trouble with their failing to open. Some of the engines had an arrangement whereby the spring pressure was relieved mechanically at the end of the stroke, but even this was not applied to all of the engines. I would be very much interested to know what actual tests Mr. Malcolm is familiar with, as a basis for his condemnation of this type of valve, located horizontally in the top of the piston.

New York City. ROBERT MILLER.

MR. MALCOLM'S ADDED EXPLANATION.

(Continued from second column, page 53.)

high pressure as you can, so as to move the charge into the cylinder as quickly as can be. Some even go so far as to fill up the piston as much as they can and core it out hollow, so that it has the appearance of a solid piston, with a space in it for the end of the connecting rod. I do not think this is good practice. But you need not be afraid of back-firing with ports constructed as described, no matter how much crankcase compression you may have, for the igniting heat is all out of the cylinder before there is any chance for the charge compressed in the crankcase to get into or have any communication with the cylinder.

I do not know the size nor the style of engine that he intends building, but have assumed that they were vertical cylinders, and, if they are four or five inches bore and stroke, they should be able to run at least 2,000 R. P. M. for their highest efficiency, with the ports constructed as indicated.

A very good form of deflector, though not the best, is to have it a little farther from the cylinder walls than the inlet port is wide, and about one and one-half times the width of the port high, straight up and parallel with the cylinder walls and extending around the piston the length of the inlet port, at the ends of which it turns at a right angle into the cylinder walls. This deflector should be securely fastened to the piston if not cast integral with it, and turned off with the piston. The deflector and the part of the piston above the first piston ring should be turned off 1-100 inch smaller than the bore of the cylinder, or the heat on the surface of the piston head will expand it so as to cause the piston to set fast in the cylinder until it is allowed to cool off. The edges of the deflector also may scratch the cylinder.

If you place these two cylinders vertically, and side by side, with the cranks opposite, or 180 degrees apart, you will have a perfectly balanced engine and will get as many explosive impulses as you would with four cylinders of the four-cycle type, and from 50 to 75 per cent. more power than you could get from two four-cycle cylinders of the same size. As the cylinders are nearly cut in two by the ports, the walls of the chambers surrounding them should be cast thick enough to give the necessary strength to the cylinder. To regulate the speed, it is better to throttle the intake port of the cylinder than to throttle between the crankcase admission and the carbureter, although either will do, if the inlet to the crankcase is a check valve, or anything but a third port. C. P. MALCOLM.

Detroit, Mich.

MR. DURYEA ON ROTARY VALVES.

Editor THE AUTOMOBILE:

Your correspondent, Mr. Putnam, asks concerning the rotary valve exhibited by us at the New York show, and we think likely more information would be appreciated by him. We have been testing this valve as time and opportunity permitted for several seasons and have built it in two or three sizes and in several forms. We have used this valve both taper and straight, and also along in separate lengths, one for each cylinder. Our experience points to the single piece straight valve carefully made as the most simple and satisfactory form. We have run engines containing this valve until the cylinders were so dry from lack of lubrication that the engine stopped. We did this to find out whether or not the valve would give trouble. We found in each case that the valve was still in good order because it is on the underside of the cylinder, where it gets oil from the piston at every piston movement and where any oil that splashes against the cylinder head flows by gravity into the valve. Further, since the valve is on the underside it is sure to get water more free from steam bubbles than the upper walls of the cylinder, while the presence of water in the center of the valve insures that it cannot overheat. From our experience we believe that regrinding will not be necessary oftener than once per season, and that when reground and fitted with new bushings the valve will be ready for another season's use at less expense than the ordinary poppet valves can be maintained. The saving in noise, flexibility, timing trouble and adjustment is enormous, and this device, in our opinion, makes the four-cycle engine as simple as a two-cycle, while retaining the four-cycle advantages.

Reading, Pa. C. E. DURYEA.

THE AUTO ADVANCING INTO INDIA.

Few people realize the strides automobiling has made in India within the past two years. Cars are penetrating into the far away mountain fastnesses of the northern border land. An auto recently sold to a purchaser at Newshera made the difficult trip successfully to Dargai and the Malakand Pass, which it ascended to a height of 3,000 feet, making a continuous climb of six miles. Another trip by the same car was successfully made to the mouth of the Khyber Pass.

LETTERS INTERESTING AND INSTRUCTIVE

The Merits of Steel and Cast-iron Bearings.

Editor THE AUTOMOBILE:

[527.]—What are the comparative merits of steel and cast-iron as materials for plain bearings, as compared with the bronzes and babbitt more commonly used for this purpose? I notice that many gasoline motors of high reputation have steel-bushed connecting rod eyes working on steel piston pins, while others have steel piston pins held tightly by the connecting rod and oscillated in the piston, thus giving steel to steel in the one case and steel to cast-iron in the other. If these materials can be made to wear so well under the severe duty encountered within the hot piston, not even provision for adjustment being usually made, why should they not prove equally serviceable and durable for crankpin and crankshaft bearings, besides being considerably less expensive to manufacture?

New Rochelle, N. Y. ERNEST C. HENCKEL.

The argument usually urged in favor of bronze and babbitt plain bearings is their comparative immunity from troubles due to faulty or inadequate lubrication. This is especially true of babbitt, the best qualities of which are possessed of really remarkable "anti-friction" properties and are capable of giving some service when dry. Moreover, when run dry too long they simply melt out without injury to the expensive shaft, thus bringing about a difficulty easily corrected by a comparatively simple and inexpensive replacement. Bronze and brass are more likely to injure shafts, while with steel or cast-iron to steel, the briefest failure of the lubrication system will be followed by overheating, scoring and seizing, to the ruination of both bearing and journal. A very important advantage of babbitt is the facility with which it can be cast in place around the journal, thus producing a close fit and perfect alignment at a minimum cost. Cast-iron usually contains an immense number of minute particles of graphitic carbon, disseminated throughout its mass, which is supposed to account for its superiority to steel as a material for sliding surfaces. With the improved and almost perfectly-reliable lubricating systems now in use, there is no particular reason why steel and cast-iron bearings should not come more and more into use. They have been used with the greatest success on some of the heaviest steam engines and other machinery ever built, and are recognized as good practice in several important departments of mechanical engineering. The subject is well worth the serious consideration of practical auto builders.

The Direction of Engine Rotation.

Editor THE AUTOMOBILE:

[528.]—Though not the owner or user of a car, I am a regular reader of "The Automobile," and as such take a great interest in the industry. Recently a friend of mine and I have had an argument about the direction in which an automobile engine, gasoline, revolves. To settle this argument, we will appreciate it if you will explain in "Letters Interesting and Instructive" whether an automobile engine can run either way, and which direction, if either, is usually preferred. THOMAS CLANCARTY.

Latrobe, Pa.

There is no possible reason why an automobile engine should not be built to run one way just as well as the other, though almost invariably they are made to run in such a direction that the starting crank must be turned in the direction of the hands of a clock to effect the starting. Automobile engines of the four-cycle internal-combustion type rarely are capable of being reversed, however, if this is the idea you have in mind. To be able to reverse, self-starting would be presupposed, and since self-starting is neither highly developed nor extensively applied, the provision of reversing cams and the other necessary adjuncts would still require cranking to produce the change in direction. A few self-starting and reversing four-cycle motors have been made, and at least one is on the market to-day, while it seems probable that more may be built in the future. Most two-cycle engines can be reversed—usually by simple manipulation of the spark while running.

An Easy One and Then a Hard One.

Editor THE AUTOMOBILE:

[529.]—Were any of the cars in the Vanderbilt race of the two-cycle type? What is the idea of such manufacturers as the Mercedes, Fiat, De Dietrich, Pope-Toledo, Locomobile, and Thomas in using chain-drive after seeing shaft-driven cars win all the cup races to date? What is the trouble with a 30-horsepower shaft-driven car with a four-cylinder, four-cycle engine, which acts as follows: The car starts off perfectly and runs nicely for about a quarter of a mile, and then, cylinder by cylinder, the motor ceases working until only one cylinder is working and then, cylinder by cylinder, begins working again? This happens repeatedly, especially when one attempts to speed the engine or in taking a grade.

Bayside, N. Y. A SUBSCRIBER.

No cars driven by two-cycle engines have been entered in any of the three Vanderbilt Cup races. Your next question is simply enough answered by the fact that cars equipped with double-chain drive have won race after race in the great road contests of Europe, several of which have been won over greater distances and at higher average speeds than have resulted from any Vanderbilt Cup race. This makes it perfectly reasonable that the advocates of double-chain drive should consider this detail of construction no bar to success. It is very difficult, without knowing more details of your car's construction and condition, to diagnose its troubles with any degree of positiveness. Your meager description sounds like carbureter trouble of some sort, such as might occur if the fuel feed were partially obstructed in some manner, particularly if the obstruction were such as to permit the float chamber to fill slowly, after being exhausted quickly by a heavy demand for power. Why the cylinders should cut out one after another instead of all dying down together from this cause, however, unless the intake piping has most unequal leads, is beyond us, and we shall be interested to see if the ingenuity or experience of our readers may suggest some more plausible explanation than we are able to advance.

Some Mixture and Ignition Phenomena.

Editor THE AUTOMOBILE:

[530.]—Would you be so kind as to answer the following questions in your journal? I understand that an explosive mixture of gas in a motor will take time (even though it be but a trifle) to burn up entirely. It is understood that we are using perfect mixture, not too rich or too weak. A fully retarded spark takes place in the combustion chamber just as the piston is returning on its outward stroke. The full charge of gas will not be entirely burned until the piston has traveled some distance on its outward stroke, and it is not long after that the exhaust valve opens to let the burned charge out. In my idea a charge fired by a retarded spark ought to give little power and hardly any heat at all, being that the burned charge is in the cylinder but a short time. Others say that a retarded spark will create heat. Why?

An advanced spark, it is said, will run a motor cool and faster than a retarded spark. My view is this: An advanced spark will enter the cylinder combustion chamber just before the piston reaches the dead center, and therefore the entire charge would be burned up entirely just as the piston is at dead center (if sooner will cause a knock). Compression is then at its highest, the explosion is greatest, and speed highest. Why, then, doesn't a strong explosion and high speed, and besides allowing the burned gas to remain in the cylinder much longer than with a retarded spark, cause more heat than with a retarded spark? The above is my own theory, and would like to know where I am at fault. LOUIS ROCCA.

Chicago, Ill.

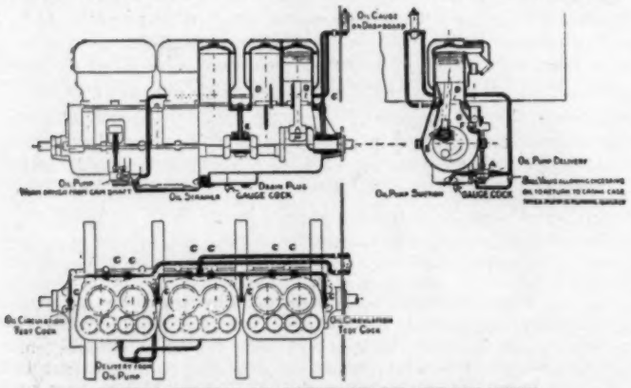
You are perfectly correct in assuming that the combustion of the charge of gaseous fuel within a gasoline-engine cylinder takes time, though it is a common error to regard the combustion as much slower than it really is. With retarded ignition, as in the case you assume, the power result is small because the combustion, with consequent pressure development, takes place after the mechanical elements of the engine—the piston, connecting rod and crank—have progressed to a position that precludes utilization of the heat. But the heat is produced none the less, and

while the burned charge is in the cylinders only a short time, this simply means that it continues to burn as it passes out through the exhaust valve and on its way to the muffler. It only requires a very slight advance of the spark itself (not inconsistent with a considerable advance of the time of commutator contact) to insure completion of combustion by the time dead center is reached, but there is no reason why a knock should occur merely because of slightly greater advance, if all of the bearings are in good condition. As a matter of fact, the knock usually attributed to undue ignition advance can hardly appear until the advance is so great as nearly to stall the motor. Power may be lost, of course, as a result of less advance than this, but since all of the pressures work downward, both during the compression and explosion strokes, what would there be to occasion a pound or knock because of too early ignition in the compression stroke? It is the practical completion of combustion before the exhaust valve opens, with consequent utilization of the heat, that keeps a motor from overheating. On the other hand, the retarded combustion, with the result that the gases are in full flame as they pass through the exhaust valve, causes the troubles usually summed up in the single word "overheating."

A Simple and Efficient Lubricating System.

Editor THE AUTOMOBILE:

[531.]—In your issue of November 8 I have read with great interest the article on forced feed lubrication for motor car engines, and I inclose you full particulars and a diagram of the Napier system of lubrication, which, I think, you will agree with me, is better than



NAPIER SYSTEM OF CONSTANT OIL CIRCULATION.

any system of drip lubrication or any system of lubrication by which the skill of the operator is called into account. Since adopting it we have never yet had a case of a car having a fired bearing when in the hands of the ordinary user. This is a good deal to say, and really, unless the chauffeur was abominably stupid, I do not see how it could happen. S. F. EDGE.

London, England.

There are no drips in connection with the Napier oiling system, and merely one oil gauge, situated on the dash. On the left side of the crankcase a small direct-acting pump A is carried, which is driven by a worm on the half-time shaft. The oil is collected by this pump through a strainer from a well in the bottom of the crankcase. The amount of oil necessary is determined by means of a Napier gauge cock, operated by means of a lever inside the bonnet. The crank chamber is filled up each morning to the correct level, that is, until oil runs out of this small gauge cock; when this is obtained, the cock is shut and the lubrication of the car is right for the day.

The oil is delivered from the pump by means of a large bore copper tube, which carries it first of all through a sight feed B on the dashboard. From the dashboard, through another large bore copper tube, it is led to the middle of the offside of the engine, where it meets a T piece, and is then carried both backwards and forwards and distributed by means of oil studs C to the four main bearings direct, and also a certain definite determined amount is fed to each of the cylinders. Between the cylinders and the crankcase there is a metal shield limiting the splash from the crank chamber to the pistons. This shield, having a turned-up lip D, catches the oil, retains a definite quantity always in the groove formed, and delivers a portion to the bearings E and to the camshaft F.

After being used, all the oil drains into the well of the crankcase, and, after passing through a strainer, goes back to the pump. Thus a certain definite quantity is delivered continuously to each of the bearings and also to the cylinders.

It will be noticed in the plan view that at the termination of the pipes leading to the two main end bearings of the engine, there are two small oil circulation test cocks. These are merely for test purposes, to make sure occasionally that the feeds are quite free, though the pipes themselves are purposely made of large bore to obviate the possibility of stoppage. Should anything happen to the pump, which would be immediately shown by the oil gauge on the dash, all that is needed is more oil in the crank chamber, lubricating by splash until the pump can be repaired. The mechanism for oiling the "big end" is shown in section in the small diagram, where the pipe will be seen leading downwards and squirting into the small scoop, carried by the big end, marked E. The pipe leading to the camshaft is marked G. The simplicity of the system is its chief advantage. It is certainly independent of any pressure, is self-contained, does away with all drips; it starts and stops with the engine and the lubrication in every case is directly proportional to the speed of the engine.

[EDITOR'S NOTE.—This system, with slight alterations in detail, is now in use on several American cars and is found to be very simple and efficient.]

ANSWER FROM THE ELMORE STANDPOINT.

Editor THE AUTOMOBILE:

[532.]—In your issue of December 20 we note a letter and your answer to some questions on the two-cycle motor. There are, undoubtedly, good and bad two-cycle engines, just as there are good and bad four-cycle engines. We think that in general your answer to the query is all right, but we would take exceptions to some parts of it, as we believe that our knowledge on this subject is more extended than any one else's, as we have done more experimenting in the matter than any one else in the world, and we have an actual production of cars extending over six years.

The valveless, two-cycle engine is, in our opinion, the most advanced type of internal combustion engine on the market to-day. We have made engines with valves and without, and we would consider that to make a two-cycle engine with valves would be simply to throw it back in development for several years, as it would then be subject to all the inaccuracy that is peculiar to the common four-cycle type of engine.

You speak of the screen in the by-pass becoming heated so that it would cause back-firing. We wish to correct you on this point, so far as it pertains to our own type of motor. Our screen is made of two layers of perforated steel inclosing a layer of fine mesh copper wire, on which screen we have a patent. We have absolutely never known of a case of the screen becoming so hot as to ignite the gas; in fact, we can make the absolute statement that if the screen is properly placed in the by-pass of an Elmore motor it will never backfire under any conditions of weak mixture, retarded spark, or any other known cause of backfiring.

Of course, every one has not had the experience we have had with two-cycle motors, and probably a lot of the errors which are communicated to the users through the papers are unavoidable, but it is a fact that a great many of the points that are brought up against the two-cycle motor are things that we have never experienced nor even heard of in the use of our cars; in fact, they appear absurd to us. ELMORE MANUFACTURING COMPANY.

Clyde, O.

CREDIT BELONGS TO MR. CORREJA, OF ISELIN, N. J.

Editor THE AUTOMOBILE:

[533.]—Referring to your issue of December 20, permit me to state that M. J. J. Correja, Jr., of Iselin, N. J., is the man who will donate the land necessary for the continuance of Middlesex Road at Iselin, and not the writer, as stated in the item under the caption of "A Dangerous N. J. Railroad Crossing." It has been my pleasure and aim to put on foot this project, and Mr. Correja and myself now await such energetic and effective co-operation to accomplish this as it deserves. By continuing Middlesex road and causing the Pennsylvania Railroad Company to build a bridge, the worst piece of road between New York City and Philadelphia will be made up-to-date and safe. A. D. HYDE.

Iselin, N. J.

AN AMERICAN VIEW OF THE FRENCH SALON

By C. W. KELSEY.

I DO not think that we Americans know anything about what an automobile show should be, when we compare our American shows with that at the Palais. It is a magnificent spectacle, and was visited by people of all classes and all ranks of society. It is preëminently the great spectacular show of France, and takes preference over all other shows and expositions held there, and is a much more popular institution than are our American shows. Technically, while there were not so many changes from the standard type, as at previous shows, there were a number of interesting innovations. Among these was an exhaust valve with a camshaft so arranged that it could be advanced 80 per cent. This makes it possible to use the exhaust as a brake, relieving the compression in an emergency, and making a quick stop when necessary. This, taken all in all, is one of the most noteworthy new ideas seen at the show. It was regulated by a lever conveniently located at the dash, making it possible to advance the camshaft to any degree required.

Generally speaking, the foreigners are ahead of us in metal work, but on designing I think that we are at least a very close second, and that within a few years we shall closely approximate the best foreign ideas. I was surprised to see that practically no chrome nickel steel was used in the construction of this year's models. The front axles are generally made of high-grade iron; the Lemoyne, the popular axle, being built of that metal, and a number of other prominent makers following the same lead. There seems to be a strong tendency to use silico-manganese steel in gears. This compound makes a very hard metal and a very satisfactory one, but it is not easy to make, as there has heretofore been a great deal of trouble getting the mixture uniform. This has been overcome almost entirely by the best foreign workers.

In making castings the French are far ahead of us. The more general custom in America is to cast single cylinders. The French have outgrown this condition. They have reduced the possibility of blowholes and other imperfections to a minimum, and therefore do not feel that they are taking any large percentage of chance in casting in pairs and even in sets of four and six. This system of multiple casting is used in most of the taximeter cabs, such as those turned out by the C. G. V., Clément, Renault and other companies. I noted that most all pressed steel work was hot pressed, making it possible to press out more intricate forms of frames and parts. In one booth I noted that even pistons were hot pressed from steel. Another tendency is to increase the general use of the shaft drive. Practically all the heavy cars and 'buses are now shaft-driven.

The use of the magneto is practically universal now. Foreign constructors seem to have settled on this, and to my mind this has been attained largely by the new Gionolli magneto, which, it is claimed, cannot be burned out. This is a big improvement in magnetos and is the only one which can be used successfully for a long time, so far as I have been able to discover, on six-cylinder machines. I was told at the show that the Stevens-Duryea people had ordered this magneto to be placed in their six-cylinder cars. I met Albert Champion, of Boston, at the show, and he stated that he was the American agent for this magneto.

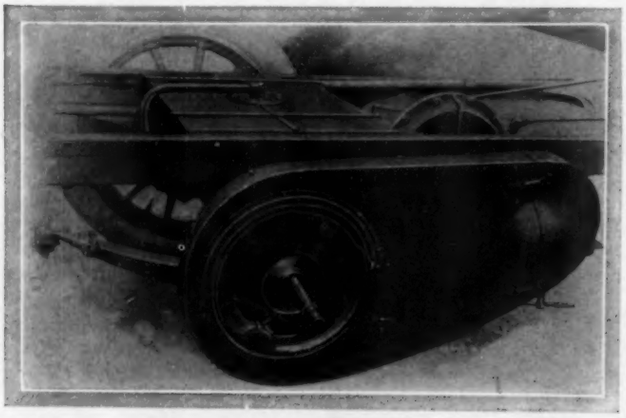
Some American products were considerably in evidence. Among these was the Hyatt roller-bearing, which attracted a great deal of attention and had a large crowd continuously around its booth.

Splash lubrication with oil kept at a level by a pump is apparently the up-to-date thing abroad. I saw a great number of cars thus lubricated. Another little detail noted was that cotter-pins are almost obsolete. Lock-washers now take the place of cotter-pins. These are of special construction which does not destroy the thread or jam the bolt into the hole. In ball-bearings, the full type seems to be in favor instead of the silent type, and there is a very wide use of this kind of bearing. Offsets seem to have been generally discarded after trial by nearly all the big makers.

IN THE VICINITY OF THE GRAND PALAIS DURING THE SALON D'AUTOMOBILE, DECEMBER 7-23.

There is, of course, much interest here in the question of the six-cylinder car. In inspecting the show, I found that the six-cylinder fad was on the wane. Nearly all makers who had made six-cylinder cars were at first anxious to assert this fact, and of course there were a great number of them shown. But when I began to question the heads of concerns in their booths, I found that nearly all of them asserted that they had made the six-cylinders more for the purpose of keeping up with the procession and that they had decided not to make any large number of these cars in the future. They admitted the greater flexibility of the six-cylinder engine, but found that cost of up-keep and other deterring elements overcame the possible advantages of six-cylinder cars. I went pretty thoroughly into this subject and believe that I reflect the general feeling.

I paid a visit to the C. G. V. factory and was particularly impressed with the high quality of the workmanship there. The firm will turn out about 350 cars during the coming year. I rode in one of their 20-horsepower taximeter cabs, and found it a wonder. The car seemed to me to have at least 30 horsepower and ran perfectly with very little vibration. In this connection I want to speak of the brake construction noted at the C. G. V. factory and now generally in use in Europe. This is a steel band with cast-iron blocks running on a drum of either pressed steel



CHAIN CASE ON C. G. V. SHOWN AT SALON.

or malleable iron. Indeed, malleable iron seems to be very largely used in construction. A number of pistons are now being made of this metal.

One of the most interesting trips I took was to the Clément factory. I was much impressed with the success made by Clément during the years that he has been in the bicycle and automobile manufacture. He is one of the most remarkable men in the business. He started with nothing at all in the early bicycle days, and was so poor that he had to make one bicycle and sell it before he could make another. Later, when the Clément and Humber concerns were consolidated, Clément's rise began to be meteoric, and to-day he is represented in four big French concerns, the Clément-Bayard Company, the Clément-Talbert Company, the Clément-Gladiator Company, the Clément-Serpollet Company, and an Italian Clément company, and he is credited with being the largest stockholder in the Panhard company and its controlling factor. He is also said to be one of the largest stockholders in both the Michelin and Dunlop tire concerns, and it is asserted in Paris that he controls about half of the output of other cars in France.

Clément has a model factory for machines, and the treatment of visitors is most generous. They are placed in charge of guides and taken in parties continuously through the works, which are strictly modern in every way. The factory is very large and the raw material is taken in at one end and the finished product shipped from the other. The building is in the form of a hollow quadrangle, with a large square building erected inside. The space between the outer and inner buildings is roofed over and serves as a roadway and testing place for the cars. Here, too, the quality of the workmanship was remarkable. I noted, for instance, that almost all the grinding of valves and other parts was done under water. Mr. Clément told me that he had already bought $4,000,000 worth of American machinery and that he was at present awaiting the shipment of $200,000 worth more. Incidently, he is also looking for an American shop foreman, which seems to indicate that American skill and methods are not entirely despised in France.

All Americans are much interested in the taximeter cabs, and I was not an exception. I rode in them on every occasion possible, and was much impressed with the two-cylinder vertical motors which were used, which seemed to have a great deal of power and practically no vibration. I did not see a single cab broken down or delayed in any way while I was in Paris. The chauffeurs rent these cabs, completely furnished and equipped, by the month, and all of them that I talked with stated that their cabs had paid them well for the six months or thereabouts that they had been in use. There was, however, some question in the minds of most of the drivers whether the coming period of repairs would reduce the profits enough to make it a bad investment for them. This is a question which only the next year will settle. Nevertheless, there are about 2,000 more taximeter cabs ordered for use in Paris.

CALCUTTA TO HAVE MOTOR 'BUS SERVICE.

According to a report just received from Consul-General William H. Michael, a company known as Calcutta Motors, Ltd., has just been incorporated to conduct a general motor 'bus and freight service in that city. It is believed that it will succeed in time in driving out the bullock carts and wretched "ticcagarris" that have served in an unsatisfactory way the increasing passenger and freight traffic. A Calcutta paper says: "The development in motor conveyance for goods and passengers was sure to come. The capital of the Calcutta Motors, Ltd., is to be $400,000. A start is to be made with ten omnibuses and ten lorries. If they could add a service of motor cars for hire by time or mileage they would confer a boon upon the community."

There are many cities in India that will make a similar change, which opens a good field for American manufacturers of motor vehicles. The sight-seeing motor car has not yet been introduced in India, and the demand for such cars should increase from year to year as the stream of visitors in the cold weather increases, as it has been doing for several years.

A SWEDISH IDEA FOR OIL MOTORS.

Consul R. S. S. Bergh sends the report from Gottenborg that J. Hesselman, a civil engineer in the employ of the gas motor manufacturing firm, Aktiebolaget Diesels Motorer, at Sickla, Sweden, has made an invention by which a gas motor can be reversed by a device within the motor itself, when kerosene or raw oil is used for motive power. It is remarked that if this invention is all it is claimed to be, it is very important, and will open a wide field for the use of such motors as marine engines, because they are so easy to handle compared with steam engines. A number of reversing gas engines have been experimented with in this country, but so far without practical success when put into actual service.

GLOBE-GIRDLER REACHES MEXICO CITY.

Charles J. Glidden, the Napier globe-girdler, last week arrived in Mexico City, though he had the misfortune to complete the conclusion of his journey in an ordinary railroad car. Fifty miles north of the Mexican capital his famous automobile jumped the track, and as a result was more or less wrecked, so badly, in fact, that Mr. Glidden found it necessary to ship it back to the factory in England, where it will be repaired and then sent to Port Said on the Suez Canal, where its owner and party will rejoin it later in the winter.

CHICAGO'S BIG SEVENTH SHOW.

More than 300 exhibitors of cars, accessories and sundries will hold forth during the week February 2-9, inclusive, at the Chicago Automobile Show, which is the seventh annual event of the kind. This makes it not alone the largest show that has ever graced the boards in the Windy City, but in the entire country, for, considered from the point of space occupied as well as number of exhibitors, there has never been anything approaching it in magnitude. The Coliseum and the First Regiment Armory will be impressed into service, the same as last year, and though the combined buildings provide 80,000 square feet of space, which is said to be fully 25 per cent. more than that used in any show held outside of Chicago, it has not been found sufficient to meet the demands of all who wish to exhibit.

There will be 102 separate exhibits of cars, something like 190 of accessories, and eight of motorcycles, beside which 10 applications for space from makers and something like 60 from accessory manufacturers have not been acted upon, owing to the fact that they were filed too late. Some of these will probably be accommodated, thus bringing the number over the 300 mark in the aggregate. A reduction of the amount of space allotted per exhibitor together with the fact that two additional balconies will be impressed into service this year is accountable for the increase in the number of exhibitors over last.

In accordance with what has come to be recognized as standard practise, the decorative scheme will be uniform and will be entirely in the hands of the management. Ivory, black and gold will form the dominating color motif, the carpeting being dark green set off by a red border. The center of the Coliseum will be transformed into an arched colonnade extending its entire length. The supports will be massive pillars of a cream tint surmounted by arches of staff springing from a point seven feet from the floor and rising to a height of eleven feet at their center. The arches, finished in old ivory, will, in addition, be flanked by automobile motifs; to the right a touring car; to the left a racing car at high speed, while the centerpiece of the arch will consist of a circular plaque with a wide gold border, the remainder being covered with scarlet plush. The design represents the upper half of a figure of Mercury grasping a steering wheel. The staff work was designed by Henry A. Thiede, of Chicago, while the plaque is the work of A. T. Merrick, of New York. Above the arches will be the exhibitors' signs.

In order to accommodate the additional number of accessory makers, an elevated platform has been built. The pillars of the building will be completely hidden by staffwork, and standing in front of them will be staff figures representing the chauffeur and chaffeuse, 12 of each being placed alternately. The pillars will also be used to bear the sign of the exhibitor. They will be backed with purple and run vertically. In order to secure as nearly as possible an uninterrupted view of the building as a whole, a low railing finished in gold and carrying a suitable curtain will constitute the only obstruction permitted.

The same general idea will be employed in the Annex and the Armory as well as the other departments, of which there will be six in all, except that the color scheme will be different in each case. Lighting effects have received the same painstaking attention and will be on an equally elaborate scale. The present gallery of the building will disappear in the elevated platform to be erected and from the edge of the latter will depend festoons of electric lights, while beneath and above the new gallery in suitable places will be ornamental clusters of staff of large size, each bearing eight opalescent globes.

Considered in the aggregate, the plan of decoration is the most elaborate ever undertaken in connection with an exhibition of this nature, so that the amount of labor and material its execution involves is of interest. To cover the floors 12,500 yards of carpet are required, while 120,000 square feet of material is necessary for the overhead decorations, and the building of the gallery calls for the laying of 20,000 feet of flooring. Add to this the amount of wall covering and the tons of plaster required for the staff work, and some idea of the magnitude of the undertaking may be gained. To complicate the problem everything must be installed within 24 hours after the building comes into the possession of the show management. Consequently everything has to be in readiness to put in place, so that the work of preparing the decorations was begun two months in advance. One hundred men have been employed constantly for that period and 300 will be necessary to install the decorations. To accommodate the completed material during the interim, four stores, a loft and a basement were needed. The total cost of the work is estimated in the neighborhood of $30,000, but this represents a saving to the industry as a whole of something like $50,000, as under the old method every firm had to send men in advance to contract for signs, decorations and furniture, whereas now the exhibitor is called upon to do nothing more than put his cars in place.

The benefit to be derived by Chicago from the holding of such a show is also an item of interest. It is estimated that the exhibitors and their employees will number at least 2,000, while visiting dealers will account for a like number. How many prospective purchasers will visit Chicago from the surrounding country solely for the purpose of attending the show is a question that it is impossible to answer definitely, but it is thought 20,000 is not an excessive estimate. For instance, Denver, Col., will send a special delegation of dealers in three sleepers; Canadian dealers are expected to be on hand in force, and the chief dealer of Havana, Cuba, will send a representative, showing that interest is not confined to local firms by any means.

PITTSBURG TO HAVE AN APRIL SHOW.

Pittsburg, Pa., Jan. 7.—The Automobile Dealers' Association of Pittsburg is at work even now on its April 7-13 show, and the representative of every car sold in the city except one is involved in the enterprise. Herewith are the fifteen concerns which compose the association: Standard Automobile Company, Bankers Bros., Atlas Automobile Company, Fort Pitt Automobile Company, East Liberty Automobile Company, Hiland Automobile Company, Keystone Automobile Company, Winton Motor Carriage Company, Allegheny Automobile Company, Auto Repair Company, Central Automobile Company, Iames Motor Company, Wilkinsburg Auto Garage Company, Liberty Automobile Company, Colonial Automobile Company.

Almost every American manufacturer of prominence, whose cars have sufficient power for hilly country, is at present represented in Pittsburg—there being 56 makes, comprising over 100 models. Owing to hilly country and bad roads, automobiles, to give satisfaction in and around Pittsburg, are required to have more power, have better brakes and be better constructed than those sent into any other large city in the United States. The Pittsburg dealers realize this; hence nothing but reliable, powerful cars are handled here. At the present time there are more high-priced, high-powerd cars in Pittsburg in proportion to the population than anywhere else in the United States.

The Duquesne Garden is specially adapted for holding an automobile show, the entire space being on one floor, without the view being obstructed by any pillars or partitions. Within a circle of 75 miles of Duquesne Garden there is more of a population than any similar circle drawn about any city in the United States, excepting New York and Chicago. This district, drawing from West Virginia, eastern Ohio and western Pennsylvania, is, as far as mills, mines, etc., are concerned, the most prosperous in the United States. The workmen, as a whole, receive larger wages and steadier employment than any other locality in the United States, and there is more money paid in wages in this field than any other space of the same size in the world. It is estimated that there will be $3,000,000 expended for new automobiles in the Pittsburg district in 1907.

This is Pittsburg's first automobile show, and will cost the dealers in the neighborhood of $50,000. The show committee, which is composed of W. H. LaFountain, Earl Kiser, Thos. I. Cochran and W. N. Murray, state that the whole of the automobile space has been sold and nearly all of the sundry spaces.

THE FARMER AND THE AUTO, TO-DAY

By A. R. PARDINGTON, Second Vice-President Long Island Motor Parkway, Inc.

BUT what of the farmer in this new era, the age of automobiles, this period of rapid transportation? Did anyone ever hear of the farmer—our one class of nobility—being left by the roadside? Never. For years now we have heard of bankers, insurance magnates, railroad investors, lawyers, and numerous other classes as being addicted to the use of the automobile. Due to the narrow-mindedness of a few, the farmer has been presented in the light of an obstructionist, an opponent of good roads, and as one who gloried in blocking the wheels of progress as exemplified by the automobile. But his attitude had some reason.

Why the Farmer Was Prejudiced at the Outset.

The early antagonism of the farmer was influenced by a very small number of the extremely thoughtless, very rich, who burned up the highways, left a trail of dead domestic animals and fowls, and the "women folks" all aquiver with their last hairbreadth escape. These very few thoughtless automobilists had been accustomed to autoing abroad, where the rural population had been through years of just such experiences, and where draft and pleasure beasts had long since become accustomed to the strange sounds and weird sights. Popular sentiment against the automobile and the automobilist was quickly aroused, and, judging from the press reports which were read daily, was soon at fever heat. Other automobilists came, driving other cars. They were of a different class, showing consideration for other users of the highway—even going so far as to stop their motors and assist the farmer to drive his beast, by leading, and by a kindly word spoken. Others, who had driven high-spirited horses—realizing the effect of the human voice—spoke to the animals as they slowly passed. There were still others, and to them belongs much credit for the quick eradication of the adverse sentiment. These, when they came up with a horse which displayed fear, stopped and urged the driver to then and there educate the horse to the presence of the automobile.

Good Work Done by the Thoughtful Autoist.

To the really fine work done by this class of autoists is due the real credit for the generally cordial relations which now exist between the non-autoing farmer and the autoist. To this class also belongs much credit for the increasing number of cars owned and operated by farmers. At these words, I hear an audible smile from some of my readers. If you do smile, and are inclined to doubt the truth of my statement, I say that I can tell you where you do not live. You do not live on Long Island, nor in certain parts of New Jersey, nor in a section of Massachusetts, nor even in good old Indiana, for the automobile-owning farmer is no rarity there, nor is he in thousands of sections of the country, where enlightenment prevails or where proper conditions obtain.

The schooling of the farmer has been rapid, but thorough. He is not likely to unlearn anything that he has learned. He has taken to the automobile with the same avidity as to the telephone. The telephone helped him to lift himself by his boot straps out of his seclusion and retirement. It broadened his view of life. It enriched his pocket. He made his sales at the high peak, and his purchases on the down sweep of the curve. He learned the weather reports before his city neighbor did. He set his watch each day on a signal from the naval observatory at Washington. He followed the progress of the world of events and was independent. Then came the automobile. His first acquaintance with it was disastrous. He watched it fly down the road, followed by a cloud of dust, and from the wreckage he dug up his pet dog—dead. He sought further and found a blooded "Rock" or "Cochin"—also dead. The cloud of dust that followed the automobile was followed by a flow of "langwidge" and of such character that its repetition would blast. Later there came another automobile, going much slower and blowing no horns. This time our farmer friend and his wife were about to drive on to the highway, on the way to "town." The horses were quickly reined in, and the ears of the good wife were shocked at the expletive which escaped our friend's lips. Slower and slower came the automobile until it stopped short of the driveway. Its driver beckoned to the farmer to proceed, but was met by a shake of the head and "some few words." The motor is stopped, and its driver leaves the car and salutes our friend in an easy manner, with the result that an hour is lost, but a firm exponent of the automobile is found. The horse has been educated. He has even put his nose into the tonneau and forgets to scare when the car moves. There are two other horses in the barn, which are also educated. There is a converted farmer, but a doubting housewife. A ride to "village," only two miles away, and a speedy return, completes her conversion, and there you are. The result? That farmer owns a good second-hand car in which he does his "errands." His wife is taken to the sewing circle or the Ladies' Aid, and how the tongues do buzz. She hears discredit, sarcasm, unbelief, and gossip. She replies by inviting her neighbor to ride home with her when the husband comes. Another convert and another car. The first link in the chain was forged only three years ago. Already it extends half way across the Continent.

Autoing Agriculturist Is an Accomplished Fact.

An isolated case, you say? By no means; on Long Island, where I live, it is common, and is becoming more common day by day. A short time ago this conversation was overheard on a Long Island Railroad train. The writer had been in attendance upon the annual Farmers' "Institute," and was returning to the city. Seated across the aisle was a well-known Long Island farmer, one of the up-to-date kind, a representative citizen. One of those who had attended the institute entered and dropped into the seat alongside of the delegate. "Well, Charley, did your folks go into the city this winter?" "No, we stayed on the farm. We bought an automobile, and the winter has been so open that we have used it a lot." From this point the conversation lost interest, but it proved the fact that the farmer is taking to automobiling. One farmer, living in Nassau county, Long Island, who two years ago fought the proposition to hold the first race for the William K. Vanderbilt, Jr., cup on the county highways, now owns an automobile, his son owns one, and together they secured signatures to a petition to have the event held on those roads for the third time. In his arguments with his neighbors he tells them that within ten years they will be hauling their produce to market in motor trucks.

Yes, the farmer is taking to the automobile, and justly so. It has enhanced the value of his acreage; it has annihilated distances, and made every resident of his county his neighbor; it has made his farm a suburban holding and has put him into the closest possible touch with the outside world.

Commercial Importance of the Farmers' Support.

Out in Indiana, one automobile concern has a salesman, whose sole duty is to interest the farmer. Sales are an every-day occurrence, each one stimulating others. In Minnesota, due to the phenomenally successful season of 1905, hundreds of farmers, who already owned pianos, are now buying automobiles. On Long Island the automobile-owning farmer has come to be a factor to be reckoned with, particularly when good roads are opposed by the non-progressive class, who are "agin" everything that makes for the betterment of general conditions.

The logical sequence of this move on the part of the farmer will undoubtedly be the motor plow, harvester, thresher, pump, corn sheller, and in time the independent electric light installation for the house and the barn.

CLUBS BUSY OUTLINING SEASON'S WORK

Lack of Discrimination by Oakland's Police.

OAKLAND, CAL., Jan. 3.—Local automobilists, and those of San Francisco as well, are much interested in the outcome of the protest which has been filed by the Automobile Club of California with the city authorities against the abuse of official power by its police officers. L. P. Lowe, chairman of the club's executive committee, has addressed an official letter to the mayor of the city, asking that the matter be taken under advisement with a view of remedying the annoyances to which law-observing automobilists are subjected. From complaints received at club headquarters it appears that no distinction is made between drivers who are trying to observe the law and drivers who are running at all rates of speed, and practically every one has been stopped and detained at the pleasure of over-zealous officers, to the great annoyance of the feminine members of touring parties especially.

In his letter to the mayor, Mr. Lowe tersely expresses the autoists' side of the matter as follows: "As against arrests of the wilful transgressors, officers should be instructed to consider both time and place and not make arrests for mere technical violations of a speed law, as if highway users, driving no matter what kind of a vehicle, be timed over a measured distance, it is safe to say that the very great majority of them will be found to be exceeding the legal rate of speed. This is pronouncedly so in the cases of electric cars, and noticeably so with milk and bread wagons, express teams, baggage wagons, delivery wagons, etc., which must necessarily be driven with rapidity if their business is to be attended to in the time limit at their command. While drivers of automobiles are certainly amenable to the law, it must be borne in mind that so also are all other highway users, and automobiles should not, therefore, as a class, necessarily be selected for prosecution or persecution. They might, in justice to themselves, retaliate by causing the arrest of all classes of technical violators of speed laws, but if this were done the courts would be so overcrowded that these cases alone could not be heard for very lack of time. Automobilists, however, have no desire to protect themselves by such extreme and unfriendly measures, and merely ask that they be afforded fair and liberal treatment, which, I am sure, you personally feel is their due."

Preparations for New Jersey Endurance Run.

NEWARK, N. J., Jan. 7.—As it has been definitely decided that the New Jersey Automobile and Motor Club will hold a 500-mile endurance run in the spring, the club officials are gathering such advance information and statistics of other contests as will enable them to formulate conditions and rules for the government of the run that will give every competitive car an equal chance in its class. Secretary H. A. Bonnell has been gathering a volume of necessary data for the use of the committee which will prove of great value in its deliberations. The committee realizes that for the contest to be a success its rules must be stringent enough to provide that the cars not only cover the distance without need of repairs, but also cover it within a certain fixed time. The cars will, in all probability, not be required to appear at the checking stations exactly upon a certain minute, as was the case in the Glidden tour, but will be allowed some slight leeway. Most of the dealers who would enter and who, as club members, have been consulted upon the matter, have expressed the opinion that to allow a half hour deviation from the time set would be fair to all the contestants. Under this plan all the contestants would have to appear to be checked in not later than schedule time, but would be allowed to appear at the stations 30 minutes in advance of schedule time if they preferred. If the cars checked in either earlier or later than within this half-hour period they would be penalized according to the magnitude of the offense. Observers are now being chosen for the run.

St. Louis, October 19, for the Balloon Race.

October 19 is the probable date and St. Louis will be the place for the start of the International Cup balloon race. President Cortlandt Field Bishop, Alan R. Hawley, J. C. McCoy, Augustus Post, and Leo Stevens were the members of the Aero Club of America who investigated the advantages in St. Louis and reported favorably to the board of directors, which has unanimously decided in favor of the Missouri metropolis. In the announcement by President Bishop the following is contained:

"As has been previously intimated, St. Louis is, from a geographical point of view, exceptionally located, being far removed from the sea in all directions. The city authorities have set apart for the starting point a portion of Forest Park. This place can be inclosed in such a way that there will be no interference with the inflation of the balloons, and the supply of gas will be sufficient for quickly inflating any number of balloons.

The club proposes to hold the contest during the period of full moon in the month of October—probably on October 19. According to the information obtained by the weather bureau during a long period of observations with kites and pilot balloons, the usual wind prevailing at that season of the year in the upper altitudes proceeds in an easterly direction towards New York, avoiding the Great Lakes, going to the south of them. Fine weather is invariably to be expected, there being usually but three or four days of rain in the month of October. It will be recalled that the greatest known balloon flight ever made in the United States was made from St. Louis by John Wise in 1859. He landed in Jefferson county, New York State.

"The Aero Club of America is enabled to announce that gas will be furnished free of cost to all contestants for the International Aeronautic Cup. Special rates will be secured at the hotels, and if a sufficient number of members of the clubs belonging to the International Federation attend, it will be possible to secure a special rate of fare from New York to St. Louis and return.

"Besides the prizes annually offered in the International Aeronautic Cup contest, various organizations of St. Louis will offer supplementary prizes for second, third and fourth places, amounting altogether to about 5,000 francs. For those wishing to make trial flights in preparation for the International Cup contest, or for those wishing to compete for the "Lahm Cup," which will be offered for competition by the Aero Club of America, after March 1, 1907, arrangements have been made to supply gas at a specially reduced rate. This applies only to pilots recommended by the Aero Club of America. The rules of competition for the Lahm Cup will be announced later. Contestants will be afforded every facility by the gas company at St. Louis.

"You are reminded that under the conditions, entries for the 1907 contest for the International Aeronautic Cup close on February 1, 1907."

Ohio State Automobile Association Meets in February.

CLEVELAND, O., Jan. 7.—A meeting of the Ohio State Automobile Association will undoubtedly be held here during the auto show week in February. It is proposed to organize a movement which will extend over the entire State, for the betterment of road conditions. Automobile clubs are being organized in all the leading centers, and the doctrine of good roads will be disseminated thoroughly during the next few months by the organizations that are already established and have a sound and stable footing. The recently reorganized club at Akron has been incorporated, and the automobilists of Elyria are preparing to form a local organization. A Cleveland man may be elected secretary of the State organization at its meeting, and if this is done Cleveland will become the center of the movement for the Buckeye State. Already the farmers' journals of Ohio are advocating improved highways, and their support, it is believed, can be

counted upon for any reasonable system of road building that may be submitted to the next Legislature.

Plans for the sample of modern highway which will be built by the Cleveland Automobile Club between Euclid and the Lake county line, in the direction of Painesville, indicate that nothing in the nature of brick paving will be considered. Secretary Goddard is authority for the statement that the road will be built of macadam or something as good. The plans include a foundation which may be used in the future as a basis for paving if desired.

President Cobe Advocates More Liberal Auto Law.

CHICAGO, Jan. 7.—President Ira M. Cobe, of the Chicago Automobile Club, states that the present year promises to be one of great importance to the automobilists of Illinois, because State regulation through the medium of legislative enactment is practically certain to come. Last year a bill that was satisfactory to autoists passed both legislative houses, but was vetoed by the Governor. A strenuous attempt will be made this year by the Chicago Automobile Club to secure the passage of a similar act, with such changes as will meet the objections raised by the Governor to the former bill.

Standing Committees of the Long Island Automobile Club.

BROOKLYN, N. Y., Jan. 7.—Standing committees of the Long Island Automobile Club were announced at the last meeting of the club, the chairmen for which are as follows: Law and legislation, Col. James. D. Bell; technical, Louis T. Weiss; good roads, A. R. Pardington; runs and tours, Charles Jerome Edwards; garage, A. C. Howe; entertainment, Edwin Melvin; membership, C. H. Galt; finance, Alfred Wilmarth. The first of the new year's exhibition nights takes place Friday, January 25, when talks will be given on the Ford, Thomas, and Stevens-Duryea cars.

Elsie Janis Joins the Worcester Club.

WORCESTER, MASS., Jan. 7.—The board of governors of the Worcester Automobile Club last week made Elsie Janis, the youthful star of "The Vanderbilt Cup," an honorary member of the club, after tendering her a reception and banquet.

CLUB DOINGS IN GENERAL.

PHILADELPHIA.—The first general meeting of the Quaker City Motor Club since its incorporation will be held at its quarters in the Hotel Majestic, February 7. At this meeting permanent officers will be elected.

AKRON, O.—The Akron Automobile Club has been incorporated by F. W. Work, S. G. Rogers, Fred C. Wood, A. H. Marks, and N. O. Mather, all prominent automobilists of this city. At the next meeting of the club permanent officers will be elected.

GUADALAJARA, MEX.—Governor Miguel Ahumada, of the province of Jalisco, has been invited as the guest of honor to the banquet of the Automobile Club of Guadalajara, which will be held the latter part of this month, in the Cedral park, at the Escoba cotton factory.

BUFFALO.—A large delegation of members of the Automobile Club of Buffalo will take advantage of the special transportation rates granted the club to visit the Madison Square Garden automobile show next week. Secretary Lewis is making the necessary arrangements for special accommodations.

CHICAGO.—At the annual meeting of the Chicago Motorcycle Club the following officers were elected for the ensuing year: President, S. W. Fahrney; vice-president, Grant W. Hunter; recording secretary, C. H. Lamb; financial secretary, C. W. Van Sickle; treasurer, E. W. Keller; captain, W. L. Johnson.

THE AUTOMOBILE CALENDAR

AMERICAN.

Shows.

Jan. 12-19.....—Annual Automobile Show of the Association of Licensed Automobile Manufacturers, Madison Square Garden, New York City.
Jan. 19-26.....—Baltimore (Md.) Automobile Show of the Automobile Club of Maryland and Dealers' Association.
Jan. 21-28.....—Los Angeles, Cal., Morley's Rink, First Automobile Show of the Automobile Dealers' Association of Southern California.
Jan. 28-Feb. 2..—Washington (D. C.) Automobile Show, Dupont Garage, Washington Automobile Dealers' Association.
Feb. 2-9.....—Chicago Automobile Show, Coliseum and First Regiment Armory. S. A. Miles, manager, 7 E. 42d Street, New York City.
Feb. 11-16.....—Detroit, Mich., Sixth Annual Automobile Show, Light Guard Armory, Tri-State Automobile and Sporting Goods Association. E. E. McMasters, manager.
Feb. 18-23.....—Fifth Annual Automobile Show, Buffalo, Convention Hall. D. H. Lewis, manager, Teck Building.
Feb. 25-Mar. 2..—Portland, Me., Second Annual Automobile and Power Boat Show, The Auditorium.
March 2-9.....—Chicago, Second Annual Power Boat Show, Seventh Regiment Armory. W. C. Andrews, manager, 19 E. Huron street.
March 4-10.....—Kansas City, Mo., First Annual Automobile Show, Convention Hall. Frank L. Woodward, manager, Willis Wood Theatre Building.
March 18-23....—Providence (R. I.) Automobile and Power Boat Show, Infantry Hall. F. M. Prescott, manager.
April 6-13.....—Montreal, Canada, Second International Automobile and Sportsman's Exhibition. R. M. Jaffray, manager, 309 W. Notre Dame street.
April 8-13.....—Pittsburg, Pa., First Annual Show of the Pittsburg Automobile Dealers' Association, Duquesne Garden.

Race Meets, Hill Climbs, etc.

Jan. 22-26.....—Ormond-Daytona (Florida) International Race Meet, Florida East Coast Automobile Association.

Motor Boat Races.

Jan. 29-Feb. 1..—Palm Beach, Fla., Annual Races of the Palm Beach Power Boat Association.
June 8.....—670-Mile Ocean Motor Boat Race, New York to Bermuda. Motor Boat Club of America and Royal Bermuda Yacht Club.
Sept. 2-6.....—Jamestown (Va.) Exposition, Motor Boat Races.

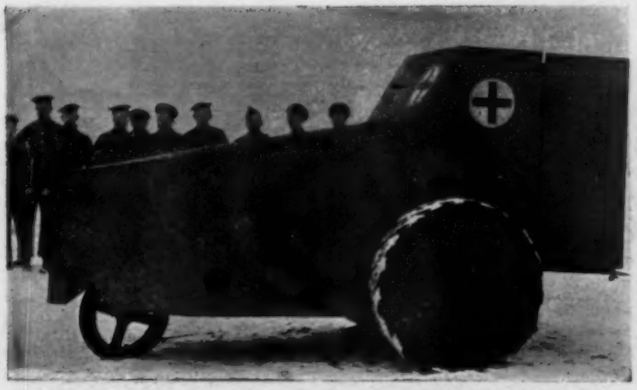
FOREIGN.

Shows.

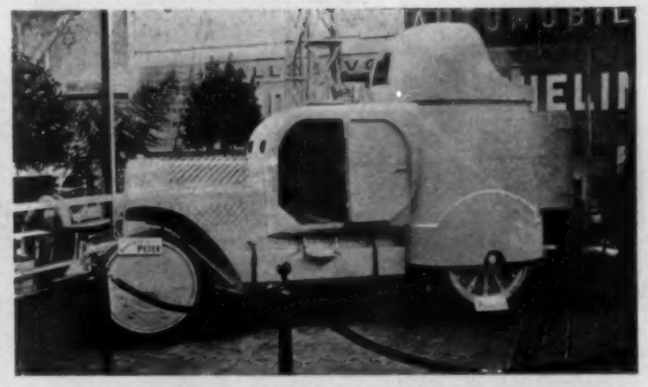
Jan. 5-12.....—Dublin Motor Show, Irish Automobile Club.
Jan. 18-26.....—Birmingham (Eng.) Automobile Show.
Jan. 25-Feb. 2..—Liverpool Motor Show, Tournament Hall.
Feb. 1-9.....—London, Crystal Palace Motor Show.
Feb. 16.....—Automobile Exhibition at Turin, Italy.
March 7-16.....—London, Olympia Commercial Vehicle and Motor Boat Show.
April 6-13.....—London, Agricultural Hall Motor Show.
May 1-15.....—Madrid, Spain, Automobile Exhibition, Palace of Fine Arts, Royal Automobile Club of Madrid.
May 15-26.....—Third Annual Swiss Automobile and Cycle Show, Zurich.

Race Meets, Hill Climbs, etc.

Feb. 23-27.....—Voiturette Contest, Automobile Club of Italy.
March 20-27....—Nice (France) Automobile Week.
April 1-15.....—Spring Wheel Competition.
April 21.....—Targa Florio Tour (Sicily), Auto Club of Milan.
April 25-28.....—Touring Contest, Automobile Club of Touraine.
April 28.....—Chateau Thierry Hill Climb.
May 1-15.....—Paris-Madrid Touring Competition.
May 29-June 1..—Irish Automobile Club Reliability Trials.
June 3-12.....—Herkomer Cup, Automobile Club of Bavaria.
June 14.....—German Emperor's Cup, Taunus Circuit, Imperial Automobile Club.
June 24-29.....—Scottish Reliability Trial, Scottish Automobile Club.
Aug. 11-20.....—Coupe d'Auvergnes, France.



RECENT TYPE OF ENGLISH ARMORED CAR.



GERMAN WAR AUTO SHOWN AT BERLIN.

AUTOS FOR THE SWORD AND PLOUGHSHARE.

During the past two years automobile shows abroad have held a potent attraction for that portion of the public that merely comes to look and wonder, to whom all ordinary automobiles look pretty much alike, and to whom an object of more than passing interest must possess unusual and bizarre features. These have been supplied by the exhibition of armored cars at the recent Berlin Show and Paris Salon, and by the agricultural implements designed to be operated by gasoline motors that have become a feature of the annual display at Olympia in London.

Anyone who has watched the rapid flight of an ordinary touring car over a dusty country road can picture to himself what that might be converted into were the car one of the armored vehicles that forms the *piece de resistance* of some of the maker's stands. Instead of the peaceful carload of autoists intent upon nothing more serious than breaking the local speed regulations, one of these oddly-shaped vehicles would come rushing along with no visible sign of human control or guiding hand steering it on its course. The all-enevloping cloud of dust would be supplemented by the smoke from the rapid discharges of the quick-firing rifle mounted in the turret-like hood over the rear of the car, and this, combined with the flashes of flame shooting from the surrounding haze that marked the swift progress of the vehicle, would make the sight of one of these cars in action something long to be remembered. To come back to them, peacefully standing inert at the maker's booth, they are objects of curiosity that lead the interested visitor to poke his head into the driver's compartment and the turret, feel the armor, mentally calculating its thickness and ability to withstand projectiles and the like.

The agricultural development of the automobile motor, on the other hand, introduces a flavor of the county fair to the show. The presence of plows, harrows and reapers, though they are merely auxiliary to the motor vehicle that is to drag them in operation, is more suggestive of the local aggregation of prize-winning pumpkins and swine than it is of high-priced automobiles. But not alone their novelty and the seeming inappropriateness of their surroundings serve to make these agricultural automobiles of absorbing interest, but likewise the excellent records they have made in actual service during the past two years. They have demonstrated that they are the equal of a far greater number of horses than could be employed economically.

MOTOR-DRIVEN PLOW THAT HAS BEEN SUCCESSFULLY INTRODUCED IN GREAT BRITAIN.

THE AUTOMOBILE

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H. M. SWETLAND, President

EDITORIAL DEPARTMENT:
A. G. BATCHELDER, Managing Editor
R. F. KELSEY, Associate Editor C. B. HAYWARD, Engineering Editor
W. F. BRADLEY

BUSINESS DEPARTMENT:
A. B. SWETLAND, Business Manager
L. R. SMITH B. FRANK BARNETT
W. I. RALPH, 1035 Old South Building, Boston, Mass.
C. H. GURNETT, H. H. GILL, 625 Monadnock Block, Chicago, Ill.

Cable Address - - - - - - - - - Autoland, New York
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The Seventh Madison Square Garden Show. Though second in time of occurrence so far as the present show season is concerned, the exhibition of cars that will be thrown open to the public next Saturday night is first in importance for a number of reasons.

Foremost among these is the fact that, with but a very few exceptions, the ranks of the exhibitors are made up of men who have been identified with the industry in this country since its very inception. They are those who have borne the brunt of the long period of the earliest stages of development of the automobile on this side of the Atlantic—a period when the business of automobile building was in a chaotic state, when experience came high and the rewards were meager. Success was largely a comparative term, for the successful car of one year gave way to something different before the end of that same twelvemonth, the frequent necessity for totally abandoning what had only been developed after a great deal of thought, labor and expense being but one of the numerous disappointments with which these pioneers had to contend during their long term of apprenticeship.

The cars that will be staged in Madison Square Garden during the coming week are the successors of many generations of American machines that have gone before, and as such they may well be said to represent most closely the trend of American thought in automobile design and building. A composite of the aggregate can doubtless be taken as the standard American automobile, in that such a car would be truly representative of the most advanced design recognized in this country, as well as embodying the best materials procurable anywhere. Whether taken singly, or as a whole, they stand second to none in any of the qualities that go toward making the perfect automobile, insofar as that qualification may be applied to anything human, and, more particularly, they not alone compare favorably, but can now hold their own with the finest productions from abroad.

If France levied an import duty equal to that in force here, an American car would cost as much in Paris as a French one does in New York—a fact that may be readily confirmed by noting the prices at which the French productions are sold in England. As there will be a representative exhibit of imported cars at the Garden, the show will afford an opportunity for comparison and will demonstrate that the American car is second to none.

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Nevertheless, High-powered Runabouts Will Sell. When a man gets into the habit of dwelling upon a subject that he dislikes, his aversion to it grows unconsciously; sooner or later it develops into a settled prejudice, and the latter is stimulated merely by thinking of it; his jaundiced eye can see nothing but the objectionable traits in everything it regards, and in the end he becomes wholly dominated by his dislike—by an idea. Generally speaking, his type of self-propagated and self-nurtured dislike is the result of neither fact nor reason; it is the outcome of what may best be termed mental strabismus, and the prejudiced critic who has thus set himself apart, on a pedestal as it were, finds it impossible to view things as do others.

Automobile racing has been the *bête noir* of the publisher of the *Horseless Age* ever since the inception of the sport. He has inveighed against it from afar and decried it at close range; he has called the gods to witness its utter folly and absolute inanity on every occasion, and every accident or fatality attendant upon an event of the kind has been made the subject of a voluminous "I told you so." He cannot see any possible way in which the industry can be benefited by it; on the contrary, every racing event held is but one more setback. Racing is doing positive harm to the automobile builder and his interests, from whatever point they may be regarded. Consequently, everything pertaining to racing comes under the ban of his exceeding disapproval, and the latest to be placed in this category is the high-powered runabout. Its very appearance is suggestive of nothing but racing, and its high power makes it fit for nothing else whatever, are his conclusions. Hence, should it be banished forthwith.

In the same issue it is mentioned, in the course of an editorial, that "the easiest riding position upon a car is as nearly as possible half way between the rear and front axles." Yet the fact that that is exactly where the seats of the high-powered runabout are placed, and that possibly comfort may be one of the *raisons d'etre* of that type of car, never seems to have dawned upon the authority in question. That there are autoists galore who prefer not to be compelled to travel about with several hundred pounds of empty tonneau capable of accommodating four or five passengers, is another fact that seems to have escaped him. There are others besides, but the fact that the runabout looks racy overshadows them. What else can it be but a racing demon——?

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Captious Criticism That Misses the Mark. The *Engineering Record*, in a recent two-column leading editorial, discourses on "The Automobile for Engineering Purposes," and in the article mingles touring car, motor truck and poor roads in a rather interesting manner. After condemning the upholstery of the touring car and criticising its lack of baggage space, the writer concludes that "a bad dirt road is not the place for the present standard low-powered truck." We think a bad road is not a good place for a horse or a mule, and not even good for walking. As to "standard low-powered trucks," our engineering friend should recall that motor trucks are not possibly of standard equipment, but must be constructed for the special service required and all engineering necessities complied with at the same time. When this is done, the automobile will show a marked economy over horse-drawn vehicles of any kind.

ASA GODDARD'S RESULTFUL OHIO ACTIVITY.

CLEVELAND, O., Jan. 7.—The Cleveland Club is making every effort to awaken new interest in automobile matters throughout the State, and it is doing this by assisting in the formation of automobile clubs and the rejuvenation of those which have become inactive. Last week Secretary Asa Goddard went to Akron and assisted in the reorganization of the club in that city, and this week Mr. Goddard went to Elyria, where a promising club is in course of organization. The aim is to form a circuit of good, live local organizations throughout the State, so that the Ohio State Automobile Association may amount to something in the advancement of the cause of good roads, and be in a position to effectively resist the enactment of unjust laws discriminating against automobiles.

While the social features of the local organizations are talked of to a great extent, the primary idea of the local club is to place the automobilists of the State in a position to put up a strong front by the time of the next legislature, so that a suitable appropriation may be secured for good roads work and a State good roads commission, similar to those in authority in eastern States, brought about. Another piece of legislation which the Cleveland automobilists have in mind is securing better regulations relative to the registration of automobiles. As the statutes now stand, an automobile party going from one State to another, and even traveling in this State exclusively, is subjected to a great number of annoyances. Licenses issued in one State are not recognized in another State. It is hoped that a universal recognition of licenses can be obtained in Ohio, as has been done in some other States.

Secretary Goddard is being boomed for the secretaryship of the Ohio State association. Mr. Goddard has a national reputation as an automobile worker, and he has accomplished a lot of good since he assumed his present duties in Cleveland. This city will doubtless be selected as the headquarters of the State organization this year, so that Mr. Goddard could easily combine the duties of both offices.

A. C. OF SYRACUSE NOMINATES OFFICERS.

SYRACUSE, N. Y., Jan. 7.—Hurlburt W. Smith has been selected for the office of president of the Automobile Club of Syracuse by the nominating committee, and as his associates the following have been nominated for the official roster: First vice-president, Christopher C. Bradley, Jr.; second vice-president, Harry C. Pierce; secretary and treasurer, Forman Wilkinson. The retiring president, Willet H. Brown, succeeded the club's first president, T. D. Wilkin, upon the death of the latter, and has held the office ever since. It is expected the nominations will receive the unanimous consent of the annual meeting of the club to be held shortly, and at which a buffet lunch will be served and social plans perfected for the balance of the winter season.

Plans are being made for the annual banquet of the club in February, when several speakers prominent in the automobile world will be present. A busy year is expected in club matters, and it is hoped to increase the membership from its present number of 150 to over 200. Fifty members were admitted during the past year. Good roads will still be the war cry of the club for next season, and the good work of placing signboards along the roads, so well begun last year, will be continued.

TRYING OUT THE GALVESTON BEACH.

During the recent visit of "The Vanderbilt Cup" Company No. 2 to Galveston, Tex., Eddie "Cannon" Bald, driver of the 90-horsepower Pope-Toledo racer, and A. E. Webb, the pilot of the 110-horsepower Premier, tried out the beach course whereon Col. E. H. R. Green made a Pope-Toledo mile in 56 seconds a couple of years ago. Bald sent his Pope-Toledo a mile in 52 seconds. Webb was detained, and his Premier was entrusted to R. Reynolds, whose unfamiliarity with it prevented a fast mile.

BRIDGING FOR THE NEXT A. A. A. TOUR.

One of the difficulties encountered on the run from Hagerstown, Md., to Staunton, Va., while a path was being sought by Augustus Post for a possible route for next year's A. A. A. tour, was the necessity of fording the Opegnon river between Berryville and Winchester, Va. In order to remove this obstacle and make the route more attractive, and so influence the A. A. A. to run next year's Glidden Tour to the Jamestown Exposition at Norfolk, Virginians have striven to prevail upon the Turnpike company to build a bridge over this stream. The company is composed of anti-automobilists of the rankest type and flatly refused any encouragement whatever. Its attitude changed when it was brought out that its original charter compelled it to "bridge all streams," and, since it had evaded the stipulations of the charter for many years, the local men made it pretty warm for the company. A contract has now been let for a $4,000 bridge, and the contractor is under bond to have it ready and open for travel by May 15, 1907. The ground is now broken and the work under way; the structure is to be of steel with concrete supports and approaches. All this shows how the advancing army of automobilists forces betterment in local conditions.

PROGRESS ON LONG ISLAND PARKWAY.

With President W. K. Vanderbilt, Jr., of the Long Island Motor Parkway in Europe, the greater part of the work in the construction of this much-wanted and much-talked-of automobile road has devolved upon General Manager A. R. Pardington and Treasurer Jefferson deMont Thompson. These two are more than busy, and recently had a satisfactory meeting with the local board of trade of Riverhead, Long Island. A substantial grant of land will probably follow from the Riverhead end of the route. Rights of way are gradually being obtained and generous additions to the subscription list are coming to hand. While it will require some extraordinary efforts to get the parkway finished in time for the Vanderbilt Cup race of next fall, the directors are confident that there will be no difficulty in being ready. The completion of the Long Island parkway will mean the beginning of other similar roadways, several of which have been mentioned in print. For the present, however, all possible effort will be concentrated upon the Long Island road, the success of which is assured beyond question.

OFFICERS FOR THE A. C. OF WASHINGTON.

WASHINGTON, D. C., Jan. 7.—The Automobile Club of Washington has elected the following officers for the ensuing year: President, Robert B. Caverly; vice-president, Col. C. E. Wood; secretary, Leroy Mark; treasurer, O. J. De Moll; captain, Frank H. Edmonds; lieutenant, C. Royce Hough. In retiring from the office of president, W. S. Duvall thanked the club for the support it had given him during the first year's existence of the club, which had enabled him to bring it up to a high standing.

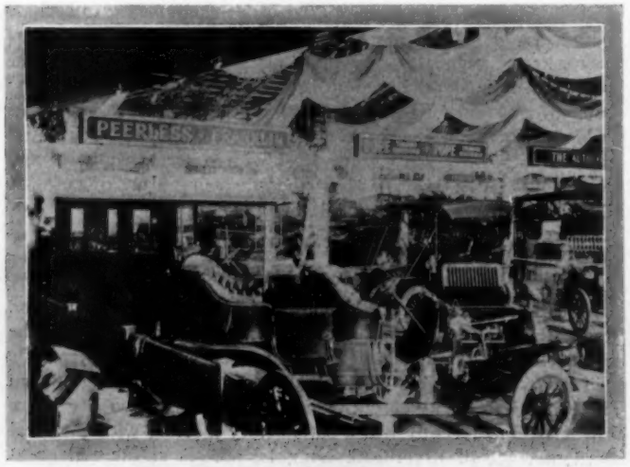
In assuming the office, President Caverly said it would be his object during his incumbency to make the club a greater power than ever in the automobile affairs of Washington. Messrs. Wood, Mark and DeMoll were reelected, while Mr. Edmonds was promoted from lieutenant to captain. The latter has promised to devise a series of interesting tours for the club during the summer. An oyster roast was given by the club on New Year's day to members and invited guests.

OLDFIELD TO RACE IN CALIFORNIA.

Barney Oldfield has decided upon California as the scene of his exhibition track races, and he is on his way westward, this time under the management of Ernest Moross, who has again succeeded W. H. Pickens in a managerial capacity. Recently the latter issued a statement to the effect that he was no longer looking after Oldfield's tour. The energetic Pickens now has Eddy Bald and A. C. Webb for his champion-speed pair.

QUAKER CITY SHOW WINS OVER HANDICAPS

PHILADELPHIA, Jan. 9.—At 8 o'clock Saturday night last the annual show of the Philadelphia Automobile Trade Association, in the First Regiment Armory, was opened by Mayor Weaver, who touched the button that flooded the building with the light from a myriad of electric lamps, strung from the roof and scattered here and there through the foliage of trellised arbors which extend the length of the main hall. An unofficial



GENERAL VIEW OF THE MAIN FLOOR EXHIBITS.

opening of the exhibition had taken place in the afternoon, when possibly four thousand invited guests took advantage of the committee's invitation to inspect the exhibits before the evening rush.

The grossly inadequate show space afforded by the armory—the main hall is but 135 by 153 feet in dimensions—necessitated some Solomonesque adjudication to satisfy the claims of all the applicants for space, and that the committee seems to have satisfied nearly everybody argues well for their judicial acumen. All hands, however, seemed to realize the impossibility of getting a "quart foot into a pint shoe," and when the awards were made the members of the association were allowed to choose by lot the mid-floor spaces, the "unattached" tradesmen being relegated to the wall spaces and the quarters of the various companies on the first and second floors in the Broad street front. The result is that 51 exhibitors, including all the 37 concerns showing complete cars, are rather closely crowded together in the main hall, while the company rooms accommodate nearly a score of accessories exhibits—and everybody seems happy.

But this very dearth of space has turned out to be a blessing in disguise, for the committee was compelled to make arrangements for an auxiliary street show, including all the two score establishments which go to make up "Automobile Row," extending for three long blocks from Callowhill to Cherry streets. This feature was taken hold of with a will, and when the mayor turned on the current in the armory the same touch showed up both sides of Broad street for a distance of a third of a mile, decorated with continuous festoons of electric lights, which were reinforced by the individual displays of the agencies and branch houses, and managers of which seemed to vie with each other in making attractive displays in front of their several establishments. As a crowning feature the electric decorations of the City Hall, still in place from the annual New York celebration, were turned on and formed a magnificent background looking down Broad street. This feature will be continued throughout the week, and on Thursday night the general gayety will be added to when an automobile carnival, a huge fancy dress parade of autos of all varieties, will hold the boards. This has been divided into touring car, limousine and runabout divisions, and numerous prizes will be distributed to the most tastefully decorated cars in each class. Although a few late applicants for space who desired to show cars and about a score of would-be sundries exhibitors were perforce left out in the cold, the committee feels that it has made no mistake in selecting the armory, if for no other reason than that demonstrations—a most important feature of local shows—can be given with convenience and dispatch. The close proximity of all the large "row" concerns and big garages permits of much more effective work in this particular than would have been possible had another and possibly larger but less conveniently located building been selected. The color scheme of the show is a combination of green, white and gold. The general effect is very pretty, although the overhead drapery is placed so low that it gives a squat appearance to the main hall.

As regards the number of different makes of cars on exhibition, the committee claims that the Palace show did not and that the Garden display will not equal it. About 55 distinct makes are represented in the 37 exhibits, of which seven—Mercedes, Fiat, Darracq, Rochet-Schneider, Hotchkiss, De Dietrich and Renault—are foreigners. Of the American cars the Matheson, Walter, Berliet, Pierce-Arrow and Packard seem to attract the most attention. At any rate, the combined exhibit is a most representative one, including about all the better known foreign and American cars.

Of the latter the only novelty seems to be the Autocycle, exhibited by the Vandegrift Automobile Company, of this city. It is a 6-horsepower runabout with single rear drive and single front steer wheels and with side bearing wheels. A maximum speed of 45 miles an hour is claimed for the Autocycle, and that it is a most easily handled vehicle can be attested to by the many who have been given a demonstration of its working qualities outside the armory.

The display of "battle-scarred" veterans is noteworthy. The winners in the recent endurance test, in all their hard-baked muddiness, repose in the best places in the various booths, the Stevens-Duryea, the Autocar, and the Matheson (which, although disqualified, finished with a clean record), all contributing in this respect. At the De Dietrich booth is shown the very car which finished first in the Ardennes Circuit and third in the Vanderbilt Cup race, with the great Duray himself to add luster to the display. Joe Tracy and his racer are at the Locomobile stand.

Auxiliary Show of the Streets.

In addition to the "Overflow Show," which includes practically the third of a mile of "Row" establishments, there is an

AN ATTRACTIVE CORNER AT THE PHILADELPHIA SHOW.

auxiliary exhibition on the street outside the Armory, where the commercial vehicles and not a few pleasure cars lay all day, with conversation artists in charge, to descant on their merits. Here may be seen the Mitchell, National, Frayer-Miller, Deere, American, and other cars whose agents were unable to secure space, besides others for which there is no room in the rather limited allotment secured by their representatives inside, who were compelled to choose between which of two or more cars they prefer to show. The Kelsey Company, handling the Maxwell, is showing the new four-cylinder car at the salesrooms. The Quaker City Automobile Company, which handles six cars, gave up the attempt to make a comprehensive display, and but one each of the Pope-Hartford, Pope-Tribune, Pope-Waverley, Pope-Toledo, Franklin and Peerless is shown, the big salesrooms down the street housing the remainder of the exhibit.

FIRST REGIMENT ARMORY, ON BROAD STREET, PHILADELPHIA, INSUFFICIENT IN SIZE TO ACCOMMODATE THE EXHIBITS.

W. J. Sprankle is in a similar fix, and is showing what he can of his Premier-Reo-Hotchkiss line. The Foss-Hughes Company, handling the Pierce, Cadillac and Baker electric; the Rittenhouse, with the Pungs-Finch and the Wayne; T. M. Twining, with the Crawford, Marion and Autocycle; the Spencer-Wilkie Company, with the Glide and Compound, and several other "Row" concerns are all working the double-exhibit scheme. There was no help for it.

The commercial contingent, for which there is absolutely no room in the Armory, is contenting itself with a street show outside. Among the cars in evidence are the Glidden tour Knox truck, the Reliance truck and the Mitchell delivery wagon, while the Autocar is showing a brand new delivery wagon at its salesrooms in the block below.

Martin & Hart, local Thomas agents, are making a big hit with the "60" Thomas which competed in the recent endurance run to Harrisburg. The car was started at the State Capital last Wednesday morning at 8.23, and the engine ran so beautifully all day that Aubrey H. Martin decided to keep it going as long as he could. At six o'clock Monday night it had scored nearly 130 hours. The car shows up at the Armory at intervals bteween trips to Wilmington, Norristown, Westchester, relays of operators and observers being taken on every few hours.

The Accessories Exhibition Is Quite Extensive

considering the limited amount of room at the committee's disposal. One of the features of the tire department is a demonstration of the process of making Ajax tires.

But two motorcycle exhibits were in place on Monday night—the Reading Standard and the Bradley—although the Simplex exhibit was expected to arrive at any hour.

Philadelphia Car for Vanderbilt Race.

A report going the rounds of the show has it that Philadelphia will be represented in the next Vanderbilt cup race, if not in the final, at least in the elimination event. The car in question will be the Bergdall-Ambler, built by the recently organized Bergdall-Ambler Company, of this city, which is now erecting a huge salesroom, garage and factory at the northeast corner of Broad and Wood streets. Few details are obtainable, except that the car will develop 75 horsepower, and that the preparations have passed beyond the paper stage. The Bergdall-Ambler Company recently obtained the United States rights for the Benz, a German car.

The "first sale" competition, a feature of each recurring show here, was won by L. E. French, the local Cleveland agent, who disposed of a car to George S. Rominger, a local merchant, at 2.30 Saturday afternoon. The souvenir fiend even has a look-in. The local Glide agents are handing out a song entitled "A Jolly Old Ride in a Glide," and at the Quinby booth a handsome 12-page calendar exhibiting various styles of automobile bodies is being distributed gratis.

Among the numerous novel advertising schemes adopted by the various concerns, that of the White Company is attracting most

attention. Four huge kites hold aloft several American flags and a yellow banner setting forth the fact that the White is at the top of the heap. At night a searchlight, located on the roof of a nearby building, throws shafts of colored light on the kites and their burden.

Roll Call of the Philadelphia Trade.

The following are the active and associate members of the Philadelphia Automobile Trade Association:

Officers: President, Gilbert F. Smith; vice-president, H. Bartol Brazier; secretary and treasurer, George T. Thompson; assistant secretary, Arthur J. Purssell.

ACTIVE MEMBERS.

The Autocar Company, 249 North Broad street.
H. Bartol Brazier, 38th and Market streets.
Diamond Motor Car Company, 2119 N. Broad street.
Eastern Automobile Co., 326 N. Broad street.
Ford Motor Car Company, 451 N. Broad street.
Foss-Hughes Motor Car Company, 201 N. Broad street.
Gawthrop & Wister, 244 N. Broad street.
Hamilton Auto Company, 206 N. Broad street.
Hills Motor Car Company, Broad and Cherry streets.
Thomas B. Jeffery Co., 242 N. Broad street.
Kelsey Motor Co., 238 N. Broad street.
Keystone Motor Co., 238 N. Broad street.
Locomobile Company of America, 249 N. Broad street.
Marion Motor Car Company, 218 N. Broad street.
Martin & Hart Motor Car Co., 215 N. Broad street.
Mercedes Import Company, 153 N. Broad street.
Motor Shop, 317 N. Broad street.
Philadelphia Reo Motor Car Co., 242 N. Broad street.
Quaker City Automobile Co., 138 N. Broad street.
Smith Mabley Co., 1407 Locust street.
Titman, Leeds Company, 316 N. Broad street.
Winton Motor Carriage Company, 246 N. Broad street.
White Sewing Machine Company, 629 N. Broad street.

ASSOCIATE MEMBERS.

Diamond Rubber Co., 304 N. Broad street.
The Fisk Rubber Co., 138 N. Broad street.
G & J Tire Company, 711 N. Broad street.
Jas. L. Gibney & Brother, 211 N. Broad street.
Hartford Rubber Works Co., 138 N. Tenth street.
Michelin Tire Agency, 322 N. Broad street.
George W. Nock, 126 N. Fourth street.
Penn Auto Supply Co., 201 N. Broad street.
Pennsylvania Rubber Company, 615 N. Broad street.
Philadelphia Automobile Accessories Co., 2041 Arch street.
Paul P. Rippien, 1207 Race street.
Rose Manufacturing Company, 910 Arch street.

KANSAS CITY SHOW PLANS ARRANGED.

KANSAS CITY, Mo., Jan. 7.—Kansas City's automobile show, March 4 to 10, will be in charge of an advisory committee appointed by the Dealers' Association, although a private organization will have charge of the details, subject to approval by the dealers. The dealers will get 50 per cent. of the net profits, pro rated according to the space they occupy. This ends a fight which has been waged for recognition by the dealers and in which they have been eminently successful. It has also resulted in the formation of an effective association, something the Kansas City trade has needed for a long time. Next year, according to the agreement made with the promoters of the show, the event will be entirely in charge, in all details, of the dealers. For this year space has been liberally taken in Convention Hall, of more than ample size to accommodate all exhibits. Interest in the show, in spite of its rather late date, is considerable and promises to give the trade a considerable boost.

After several preliminary meetings, the dealers got together January 3 and organized with the following officers: President, F. B. Doddridge, Missouri Valley Motor Co.; vice-president, C. F. Ettwein, Ettwein Motor Car Co.; secretary and treasurer, E. P. Moriarty, E. P. Moriarty & Co.; directors, W. R. Demster, Demster Machinery Co.; C. C. Meade, Ford Motor Co.; C. E. Cook, Palace Auto Co.; J. J. Wittman, Pope-Toledo Motor Car Co.; W. S. Hathaway, Buick Automobile Co.; Frank Bales, Cadillac agent.

CLEVELAND AND BUFFALO SHOWS CONFLICT.

CLEVELAND, Jan. 7.—The Cleveland and Buffalo local shows conflict in dates this year, coming exactly at the same time, but it is not believed that there will be any serious interference either in the matters of exhibits or attendance. Practically all the cars exhibited here will be shown through local agents, and the same is true of most of the lines of accessories, as the big Cleveland houses now handle practically everything that is built for or used on a car. The Cleveland show probably has somewhat the best of the bargain from the fact that it has secured a sanction from the motor and accessories manufacturers and will receive the support of that organization. It is claimed that had the local dealers been so inclined they could have nipped the plans of the Buffalo people before they were fairly developed. Instead they replied that they had no objection to the Buffalo show being held the same week, believing, as stated, that there would be no interference.

George Collister, manager of the Cleveland show, has received a communication from D. J. Post, president of the Motor and Accessories Manufacturers (Inc.), asking that the local officials do all in their power to correct one of the abuses which has heretofore annoyed people at local shows; that of allowing parties who purchase no space to roam from booth to booth with samples in their pockets and solicit orders.

WORCESTER TO HAVE AN AUTO SHOW.

WORCESTER, MASS., Jan. 7.—Frederick N. Prescott, promoter of the Portland and Providence automobile shows, plans to have a show in Mechanics Hall. It will be the first Worcester has ever had, and will be the first in New England this season, the Boston and other shows following a month or two later.

Mr. Prescott has room, according to his plans, for about twenty large exhibits, Worcester dealers being let in first. The only hitch will be in getting the big cars into the hall, which is of the two-story kind. If he cannot get the cars in the hall, he has arranged matters whereby he can secure other quarters in Worcester. There is scarcely any doubt about the show going through. Whether or not the Worcester Automobile Club will have anything to do with the affair has not been definitely determined, although President J. P. Coughlin is soon to be a dealer. As now arranged, the show will be held the week beginning February 11.

TEMPORARY RECEIVER FOR E. H. V. CO.

O'Brien, Boardman, Platt & Dunning, attorneys, of New York City, acting for four creditors of the Eisenhuth Horseless Vehicle Company, of Middletown, Conn., have filed a petition in the United States District Court asking that the company be declared bankrupt. Creditors named are Charles L. Hoffman and George D. Provost of New York, N. Townsend Thayer of Brooklyn, and W. F. Faulkner of Morris Park, N. Y., and the amount of their claims is $1,107.91. They allege further that the company has more than twelve other creditors. Acting upon the petition, George T. Schull, of Middletown, has been appointed temporary receiver of the company, and is required to file a bond of $50,000. The Eisenhuth company has had considerable financial trouble in the past, and the action taken was not unexpected.

TRADE CREDIT ASSOCIATION MEETING.

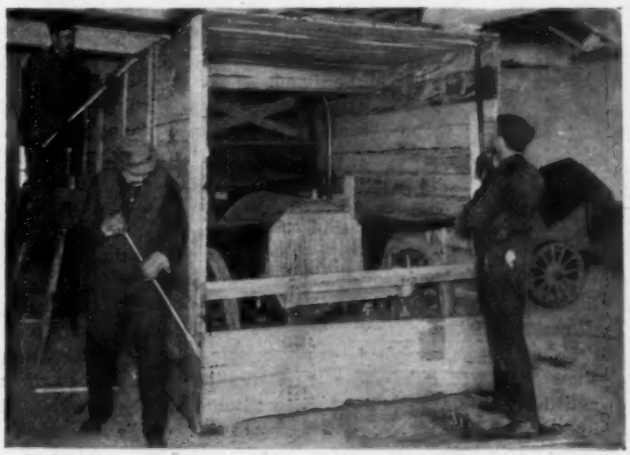
The annual meeting of the Automobile Trade Credit Association will be held Thursday evening, January 17, at the New York Athletic Club, at which time directors will be elected to fill vacancies. The meeting is scheduled for half past five o'clock in the afternoon, and will be followed in the evening by an elaborate dinner. The members of this association are located in all parts of the country, and are banded together for protection against the extension of credit to weak or unscrupulous buyers. Its aims are effected through mutual cooperation of the members throughout the country. The association's offices are located at 80 Wall street, New York City.

APPRAISING IMPORTED CARS FOR CUSTOMS DUTY

By HARRY W. PERRY.

UNUSUAL interest will center in the work of the United States appraisers at the port of New York during the present week because of the large number of foreign automobiles that will arrive on the European steamers for exhibition at Madison Square Garden.

Owing to the great urgency of giving the importing agents immediate delivery of the exhibition chassis and complete cars



REMOVING A CRATE FROM AN IMPORTED CAR.

as soon as they are landed, and to the limited facilities of the appraiser's office, a special arrangement has been made with regard to show cars. The appraiser has consented to permit the machines to be taken, as soon as landed, direct from the wharf to the Garden, where they will be examined and appraised for the collection of the import duty.

Probably very few automobilists except the regular importers, and possibly the rare American who purchases a machine abroad and brings it home with him, know anything about the routine that a car goes through in its passage through the Custom House when it comes into the country.

"In the first place," said Deputy Collector H. L. Swords, when interviewed in his office at Christopher and Washington streets, "the machine comes from the wharf on a truck to the government garage and the invoice is placed in the hands of the examiner. No examination is made until the invoice is in hand. The car is then stripped of its wrappings and examined as to horsepower, maker's number, and accessories. If the price entered on the invoice is found right the return is made to the Collector, and delivery is made of the car when the duty has been paid at the Custom House on Wall Street."

For more specific information as to the method of making an examination, the writer was referred to Examiner Thumb. "We verify the bore and stroke dimensions as given on the invoice by making measurements of the cylinders," he said. "We do not go by the horsepower ratings, which are given at the minimum on the other side because of the horsepower tax in France. Bodies and all regular equipment as commonly included when a car, as distinguished from a chassis, is bought, are assessed at the same rate as the chassis—45 per cent. duty. Separate bodies take 30 or 45 per cent. as manufactures of wood or aluminum, as the case may be.

"Cars are often passed in a day," said Mr. Thumb, replying to further inquiries. "Frequently cars that come into the garage in the morning are released the same day. The examination sometimes does not take more than ten minutes, if the invoice is all right. But sometimes the machine is away down in the bottom of the hold of the ship, and it takes two or three days to land it.

"We sometimes get as many as twenty-two machines in a day," he continued, "and if the importations continue to increase as fast as they have during the last year, it looks as if I would have to have some help."

Mr. Thumb is the only examiner of automobiles for New York, and the number of cars imported during the year just closed averaged close to five for every working day. Some interesting figures showing the rate of growth of imports were given by Assistant Appraiser Harvey T. Andrews, who exhibited a sheet of figures giving the number of automobiles passed through the Appraiser's office each month from May, 1903, to the end of 1906. As this was merely a private record kept for the convenience of the office, he declined to give it out for publication. But the statement showed that the total number of cars imported through New York for the year 1904 was 602. For the following year the number had increased to 1,054, and the year 1906 showed an increase of 50 per cent., the number reaching 1,561.

Some very interesting sidelights on the work of the Appraiser's office, and the enormous volume of goods that it is called upon to inspect, were given by Mr. Andrews. "This is the ninth division of the United States Appraiser's Warehouse," he said. "It passes all manufactures of wood, stone and metal, including automobiles. Last year the imports through this division reached a total aggregate value of $95,000,000, of which $5,488,690 represent foreign automobiles. You can get some idea of the marvelous increase in the country's imports when I tell you that the increase in this division alone is represented by import values aggregating $25,000,000 more than similar imports during last year. This is only the increase, mind you, while eight years ago the total valuation of all imports passing through this division was only $20,000,000. The importations of automobiles have been on a gradually increasing scale year by year. When the present tariff law was passed in 1897 there was no such thing as an automobile coming through the port, and so there is no specific provision in the law to cover them. But the increase has been so rapid of late that it became necessary last October to set aside a special building for their storage while awaiting and undergoing appraisal. This building affords 7,000 square feet of floor space, and will hold from twenty-five to thirty cars at a time, which number is sometimes exceeded when the imports are heavy, as they always are in October and in January. For instance, you see that October was the largest month last year, when 220 were brought in, and also in 1905, when there were 138. Probably more than 200 will come in during January this year, and next week there will be an unusual number because of the auto show.

PUTTING THE EXAMINER'S STAMP ON THE ENGINE.

It is of interest to note, by the way, that we are already beginning to feel the influence of balloons and airships. About this time last year we passed several for the automobile show, and a number came through since then, so that it looks as if we shall soon have airships as an article of commerce. At first the department was at a loss to know what division to assign them to, but finally gave them to our division because of our familiarity with automobiles and their engines, and because all manufactures of wood and metal pass through the ninth division.

"The renting of a separate building for automobiles minimizes the danger of scraping and marring the fine finish of the cars and also facilitates the handling. The building is at Christopher and West streets. When the machines are taken there they are under the control of the Collector, who acts as custodian. We have nothing to do with them until they are turned over to us with the invoices for examination, and when the examination is finished they are returned to his care. Our work is simply to put the price on them; the Collector's force calculates the amount of duty from the prices and rates we give, and then collects the duty for the Government."

UNLOADING IMPORTED CARS AT GOVERNMENT GARAGE.

In the background is shown the United States Appraiser's Warehouse, where hundreds of millions of dollars' worth of imports are handled annually.

Asked how the valuation of a car was arrived at, Mr. Andrews replied: "We keep posted on the prices of all makes of cars and chassis by means of price lists furnished from abroad, and frequently know the prices even before the importers. Then the prices must also be sworn to on the invoices. If the price is not on the invoice, or does not seem correct, we mark our own valuation on it, and nobody can force us to change that valuation. Either the importer or the Treasury Department can ask for a second appraisal, if the former thinks the price is too high or the Government thinks it is too low. Then, if one or the other is not satisfied with our figures, appeal can be taken to the Board of General Appraisers, on the seventh floor of this building."

As it may not be generally known how the high duty of 45 per cent. comes to be charged on automobiles when such machines are not specified in the tariff, the assistant appraiser gave the following explanation:

"The law provides that where *ad valorem* duties are assessed the value for customs purposes is that which obtains in the country from which the article is imported when sold in the usual and ordinary wholesale quantities. As there was no specific provision in the tariff law of 1897 covering automobiles, they are classified for duty under paragraph 183 of the tariff, otherwise known as the 'catch-all' paragraph, which provides a duty of 45 per cent. *ad valorem* on all manufactures of metals not otherwise provided for."

"How is it," Mr. Andrews was asked, "that the automobiles brought in for exhibition at the show all have to pay the full 45-per-cent. duty? Is there not a provision in the law or some department ruling to the effect that cars can be brought in free if re-exported within a certain period, as three months or six months? The question has created some discussion."

"No," replied the assistant appraiser, "there is no such provision relating to cars for exhibition. When exhibits of any sort are brought in for world's fairs they are, by special arrangement, permitted to come in free of duty under bond, and if not sold the deposit under the bond is refunded when they leave the country inside of a certain period. In 1903 the Treasury Department made a ruling that a tourist might bring in a car under bond for three months' use in this country. Afterward this was limited to apply only to foreigners. This ruling was broadened again about a year later so as to include cars imported for racing purposes.

"So at present there are three cases in which a car may be imported free, the first being the case of a tourist from a foreign country, who, by giving a bond, can enter his car for three months; the second, that of a foreign firm which may import a car for racing purposes; and, third, the case of any person who has owned and used a car abroad for not less than twelve months, and who may import it free under what is known as the 'household effects' clause. Thus there is no provision in the law nor any department ruling that will let us admit machines for the annual shows free of duty. However, most of the cars put on exhibition are those of leading French, German and Italian firms, whose products have been so well advertised that the demand exceeds the capacity of the factories, and the cars seen at the shows are already sold or are certain to be bought before the shows end. In either case the car will remain in this country and duty will have to be paid, so that nothing would be gained by bringing it in free under bond, even if it could be done."

It will perhaps be of interest to add that any car taken abroad for touring and reimported, whether of domestic or foreign manufacture, is admitted free of duty, provided that only the ordinary necessary repairs and replacements have been made on it. This might include a set of new tires, a new lamp to replace one damaged, and other replacements, but if the car has been completely overhauled, repainted and refitted with foreign equipment, so as obviously to enhance its value, it must pay the regular 45-per-cent. duty, not merely on the increased valuation, but on the whole car and fittings. The only concession is that it will be appraised as a second-hand car, and the amount of duty to be paid will be correspondingly lower than on a new machine.

FROM THE INDIANA AUTO FIELD.

INDIANAPOLIS, IND., Jan. 7.—With factories already working overtime, all State agencies closed and sample cars displayed, and with several new concerns being organized and building plants, everything looks encouraging for a record-breaking output in Indiana this year.

Work has been started on the new plant of the Maxwell-Briscoe Motor Company at Newcastle, and it is expected that it will be ready for occupancy about July 1. Contracts for the foundation, calling for about 1,200 yards of concrete, have been let, and the steel work will be put up as quickly as possible. When completed, a force of about 1,200 men will be employed, and the yearly output will be fully 5,000 automobiles.

The Murillo Automobile Company, of Marion, has been reorganized as the Coppock Motor Car Company, and incorporation papers showing a capital stock of $100,000 have been filed. Directors are: Harry Reynolds, M. Earl Brackett, Harry Ward and Lambert W. Coppock. It is the company's intention to manufacture a car suitable for carrying both merchandise and passengers.

Another new company is the Garrett Automobile Company, of Garrett. It has a capital stock of $10,000, and will begin manufacturing automobiles shortly.

The Stanley Automobile Company, at Mooreland, is preparing to manufacture cars. One model, especially adapted for country and city use, will be made.

PLOUGHING THROUGH THE RICH RED MUD THAT ANSWERED FOR ROADS IN VIRGINIA AND NORTH CAROLINA.

OLDSMOBILE ON FLORIDA SOIL.

Despite the almost impassable nature of the country that has been traversed, the end of a week and a half of strenuous endeavor finds the variously christened Oldsmobile "alligator," "mudlark," and "pathfinder" across the Florida line, and almost within hailing distance of the long-sought goal.

Charlotte, N. C., was left behind last Friday afternoon, and after a strenuous drive of several hours the night was spent in a little place called Rock Hill—too small to be dignified by so much as a dot on the map. Whether Rock Hill is in North Carolina or South Carolina is a question that probably even the pathfinding party could not answer correctly. At all events, it is pretty near the line one way or the other, so that the next day's trip brought the party to Columbia—about half way across South Carolina, where the car and its occupants were greeted by the usual demonstration and bombarded with an endless string of questions regarding themselves, the car and the trip, not omitting a frequent invitation "to have something." The car and its passengers are arousing a great deal of curiosity.

Leaving Columbia the next day, Batesbury, S. C., was reached, where the next night was spent, another day's run bringing the party to Augusta, Ga., on the Savannah river, which marks the boundary line between the two States. After crossing the river into Georgia the roads took on a totally different appearance and character. Instead of the red clay of South Carolina, which sticks to everything like a long-lost brother, the deep and shifting sand of the Georgia pine forests was encountered, and, so far as the running was concerned, there was not a great deal to choose between them. And the pines brought another disadvantage with them, for Sunday found the party lost in what appeared to be an interminable stretch of pine trees, so tall and thick as to practically shut out the sunlight. These woods are higher and the roads are excellent except that they are so narrow that there is scarcely room for the car to pass without the hubs striking the trees, and they wind in every direction of the compass so that they are utterly bewildering. It is like a beautiful mystic maze, but so puzzling as to render one absolutely helpless. After several hours of aimless wandering, a clearing was stumbled upon and, after inquiring the way of the inhabitant of the sole house in sight, it was decided to put up there for the night.

To go back over the route that has been followed, the party found themselves in Danville, Va., on the evening of New Year's day, but twenty miles having been covered since morning, when

A FORD IN VIRGINIA OF WHICH THERE WERE MANY.

A TOUGH CASE OF BLOCK, TACKLE, AND JACK.

IN EVERY SOUTHERN TOWN THE TOURISTS AND THEIR CAR WERE A SOURCE OF MUCH WONDER AND EXCITEMENT.

Chatham, Va., was left. The roads are sticky red clay, which is a close brother to the "gumbo" mud of the West. This surfacing is a foot or more in depth and makes hard pulling under any circumstances, but on long upgrades the strain is terrific as such a mass of it has to be carried and shoved along by the car. But worse than the mud are the mud holes; they were always filled with water and gave no hint of their depth, so that the car frequently plunged into mud and water three or four feet deep, the differential being hung up on a rock every now and again so that the rear wheels would spin around with the engine racing at full speed until shut off. It was a good deal like a ship in a heavy sea with its propeller coming out of the water unexpectedly. Going like this has made the block and tackle, shovels and four pieces of plank the most valuable things on the car, and if there is any distinction to be made, it must be awarded to the planks, for they have proved to be worth their weight in gold.

Three miles an hour has frequently proved to be all that could be averaged, and the hour usually entailed forty-five minutes' strenuous labor with sapper's tools for every fifteen minutes of driving. The roads surpass description; they are the worst imaginable, sometimes being totally submerged for long stretches so that the car swishes along with the mud and water almost up to the running board. The natives state that the roads in question are not used at all during the winter except in cases of urgent necessity, and then extra horses are required to make any progress at all. Mr. Owen thinks they are far better at certain seasons of the year, and with proper attention would soon be available all the year round. North Carolina has carried off the palm in this respect. The roads near the Virginia line in that State have been far and away the worst that have been encountered on the trip, and, though not a great deal better, there was sufficient difference in the southern part of the same State to make a distinction between them. Of course, a hotel is practically an unknown quantity in any place but the towns, though the people throughout the South are very hospitable.

Everywhere that a stop has been made the natives have been obliging and ready to lend every aid in their power, though frequently this has not been much, even in the line of information, and information in that section is essential.

A TYPICAL VIRGINIA HOME.

THERE ARE REAL BRIDGES.

CHAINS IN MUCH DEMAND.

A TRYING PENNSYLVANIA ENDURANCE RUN

PHILADELPHIA, Jan. 7.—The first annual endurance run of the Quaker City Motor Club, from this city to Harrisburg and return, last week was a most successful affair, thirteen of the original twenty-four starters finishing within the time limit. The winner of the Stillman Class B cup for cars costing $1,500 or less turned up in W. George Brooks' Autocar, which had but five points penalty chalked up against it.

F. THOMPSON'S STEVENS-DURYEA WHICH FINISHED FIRST.

The fight for the honors in Class A developed a double protest against the only perfect-score cars—the Matheson and the Stevens-Duryea. The former was ruled out at Harrisburg by the committee for equipment shortcomings, its special testing body not conforming to the rule regarding touring-car trim. Mongini, who was at the wheel, took his disqualification with equanimity, left the capital at the specified time and finished without the shadow of a demerit. The protest against the Stevens-Duryea was an eleventh-hour surprise, and was filed by T. W. Berger, entrant of the Oldsmobile, which finished second in Class A, it being claimed that the Stevens lost its muffler on the outward trip, and continued the run minus that necessary article of automobile furniture, which would constitute a violation of Rule 8 of the conditions governing the contest. Berger, by the way, had very hard luck. His Oldsmobile had arrived at Harrisburg on the first day twenty-one minutes ahead of time, and was waiting behind the line, with motor running, for the officials to check him into the control, when some of the mud picked up on the way worked into the carbureter and stopped the engine. The mishap cost him the only two points charged against his car. This unusual cause of stoppage demonstrates more clearly than any word description the extraordinary bad conditions of the road. Even on a very muddy road with a moderate undersurface foreign matter will never penetrate to the carbureter. Only axle-deep mud could reach this important organ.

The protest filed against the Stevens-Duryea was subsequently allowed, but the penalty inflicted, one point, did not change the relative standing of the cars, as the Oldsmobile, which finished in second place, had two points charged against it. The local Matheson people have their car on exhibition at the Armory show, labeled "The only car which finished the endurance run with a perfect score."

A protest filed against Charles Hoffman's Simplex, on the ground that it was not fitted with a regular touring car body, was also sustained, and the car returned to Philadelphia as a free lance, doing "first aid" work and acting the Good Samaritan generally.

Some Things That Happened to the Participants.

"Wally" Owen had hard luck with his Cleveland. After plowing through the mud on the first day, and passing all the intermediate controls on his schedule time, he was within half a mile of the Keystone Garage in Harrisburg—the official stopping place—when the engine stopped owing to overheating, due to a leak in the radiator. When he checked in "Wally" was 49 points to the bad.

One particularly plucky performance was that of No. 4, Aubrey H. Martin's 40-horsepower Thomas Junior. Four miles beyond second control on the outward trip—Sadsburysville, 45 miles—the main shaft snapped in half. After a council of war the crew decided to repair it. There was no machine shop at Sadsburysville, and, leaving Observer J. R. Baltz to watch the car, the others trudged back through the deep mud four miles to Coatesville, where they finally located a small shop—closed on account of the holiday. They hunted up the owner, and he accommodatingly gave them the run of the establishment. In ten hours they managed to finish up a substitute, and then floundered back through the mud and darkness to where the crippled car lay—with the faithful Baltz curled up fast asleep in the tonneau. With only the light afforded by the car's lamps, the new shaft was put in, and at 3:25 the next morning, having lost fourteen hours, the trip was resumed. Harrisburg was reached at 8:04 A.M., and the return trip was started at 8:13. The makeshift shaft made good, and the finish was made on schedule, although the car had been ruled out for not finishing the first leg of the course within the limit.

Highway Conditions a Striking Object Lesson.

The road conditions, especially during the first day's run, were simply frightful. A three-days' downpour had made quagmires of all but the best roads. Thirty of the thirty-seven miles between Lancaster and Harrisburg were so bad that the finishing of twenty-two of the twenty-four starters is considered little short of remarkable. If there was ever an object lesson given for the necessity of immediate road improvement in Pennsylvania the first midwinter run of the Quaker City Motor Club amply demonstrated it. There is no reasonable argument, barring the existence of a heavy fall of snow, to be advanced against a winter trip, such as was projected and carried out by the club, and the very fact that it was successfully accomplished speaks wonders for the pluck and endurance of the participants and the cars that were driven over the well-nigh impassable highways, if in reality, some of them are worthy of being dignified by that name.

The movement for highway improvement in the Keystone State will necessarily be advanced by the recent run, as it will bring the citizens of the commonwealth to a realization of the

W. G. BROOKS AND HIS WINNING AUTOCAR.

conditions existing, such as no other practical demonstration would be capable of presenting. The route, with the official controls, distances and schedule time, was as follows:

FIRST DAY, JAN. 1.	Distance.	Time.
Philadelphia to Malvern	23.1 miles	1 h. 30 min.
Malvern to Sadsburysville	21.5 "	1 h. 5 min.
Sadsburysville to Lancaster	22.7 "	1 h. 20 min.
Lancaster to Elizabethtown	19.4 "	1 h.
Elizabethtown to Harrisburg	17.4 "	1 h. 20 min.
	104.1 "	
SECOND DAY, JAN. 2.		
Harrisburg to Lebanon	25.2 miles	1 h. 40 min.
Lebanon to Reading	29.3 "	1 h. 25 min.
Reading to Pottstown	20.6 "	1 h.
Pottstown to Norristown	15.5 "	1 h.
Norristown to Philadelphia	15.9 "	1 h. 30 min.
	109.5 "	

MacDonald and Campbell Cup, Class A.

		Penalties.
1.	Stevens-Duryea; owner, Geo. F. Thompson; driver, F. W. Aurig	1
2.	Oldsmobile; owner and driver, T. W. Berger	2
3.	Lozier; owner, M. E. Brigham; driver, H. Michener	3
4.	Studebaker; owner, E. C. Leeds; driver, F. H. Yerger	17
5.	Oldsmobile; owner, G. H. Gantert; driver, John Talles	48
6.	Locomobile; owner, Richard Sellers; driver, J. W. Flonda	53
7.	Cleveland; owner and driver, Wallace Owen	117
8.	Thomas Flyer; owner and driver, E. R. Kelly	191
9.	Cadillac; owner and driver, F. W. Stockbridge	211
10.	Stearns; owner, L. D. Berger; driver, O. H. Hoffman	324

H. B. Stillman Cup, Class B.

1.	Autocar; owner and driver, W. G. Brooks	5
2.	Rambler; owner, G. W. Barbier; driver, Harry Walls	230

The Frayer-Miller car, which won the Berkshire Hills economy run of the New York Motor Club last November, finished No. 11 in Class A, a series of disheartening tire troubles giving it 709 points in penalties.

DELAWARE'S GOVERNOR HAS SUGGESTIONS.

WILMINGTON, DEL., Jan. 7.—The Delaware Legislature, now in session, will probably make some changes in the automobile law passed at the last session. The biennial message of Governor Preston Lea contained the following:

"The protection of the public against careless and reckless motorists has rendered necessary a revision of the present law touching motor vehicles. Accidents arising from automobile driving are frequent. Excessive speed is the chief cause and inspires the dread and prejudice on the part of the traveling public against automobiles. As a vehicle of utility the automobile should be recognized as possessing the same right as all other vehicles in the use of our highways, subject, however, to certain restrictions inherent in the character of these machines. I recommend that the present law be so amended as to provide:

"1. For an annual payment of a license fee of $5 by the owner of every motor vehicle.

"2. For the annual payment of a license fee of $2 by chauffeurs.

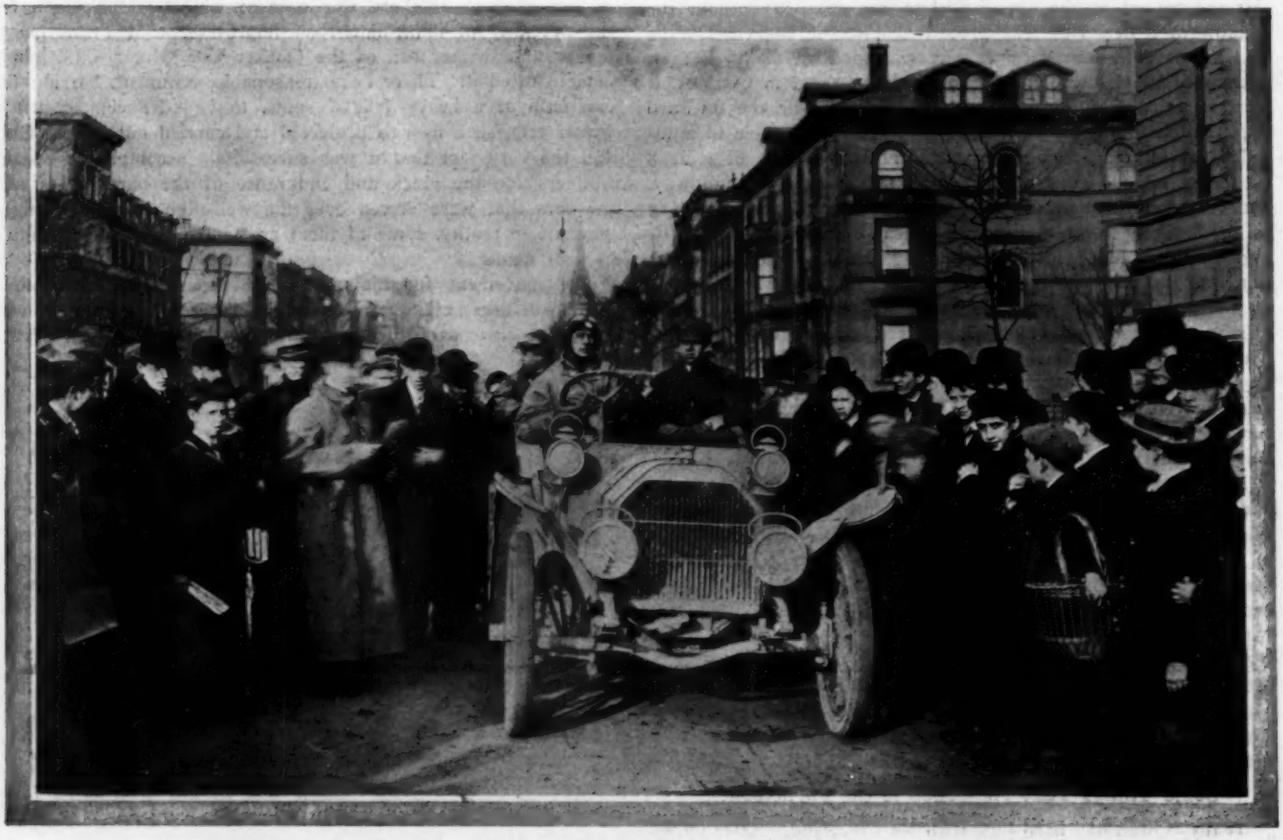
"3. For the revocation of all licenses under proper restriction, upon proof that the licensee is an incompetent or reckless driver.

"4. For the employment by every person incompetent to run a motor vehicle of a licensed chauffeur.

"5. For the payment of all such license fees, together with all fines and forfeitures imposed under the provisions of the law, to the State treasurer, who shall carry such funds to a highway improvement fund to be expended pursuant to a proper highway improvement statute.

"Pecuniary penalties have not proved effective in checking reckless and careless driving. Fine and imprisonment has been demonstrated to be the only effective check, fine for the first offense and fine and imprisonment for all subsequent offenses."

With Russian caviare concealed in the hollow rims of his automobile, a smuggler was recently detected by customs officials crossing the Russo-Austrian frontier near Cracow.



T. W. BERGER'S OLDSMOBILE, WHICH FINISHED SECOND IN THE QUAKER CITY MOTOR CLUB'S ENDURANCE RUN.

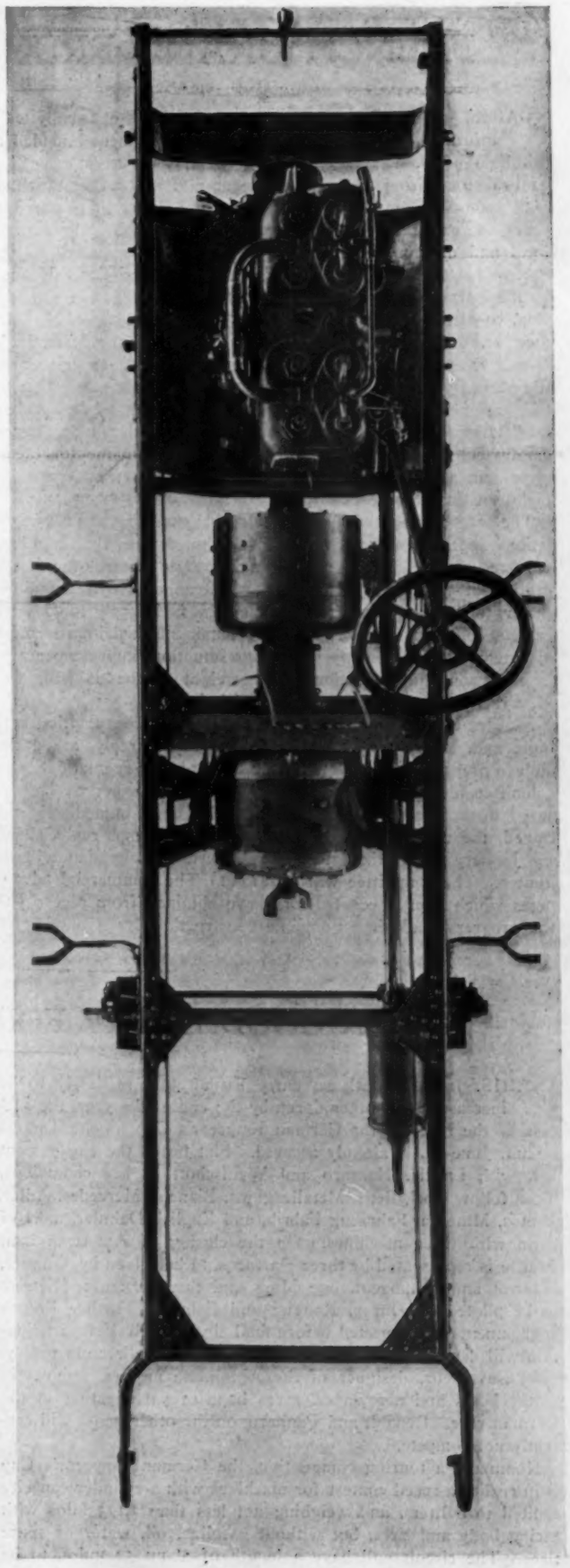
THE COLUMBIA GASOLINE-ELECTRIC.

Electricity has long been regarded as promising a solution of the vexatious problem presented by the "gearless" car which represents the aim of the designer. While others have been seeking this end along the path of multiplication of cylinders in order to attain the infinitely flexible motor, the Electric Vehicle Company has been studying the problem from a totally different point of view, that of interposing an electrical connection between the motor and the driving wheels instead of a mechanical union such as is at present typified by the usual clutch and change speed gears in which pinions are slid into mesh. The latter is a system that has always been reputed to violate the first principles of engineering, and the frequency with which early change speed gears were wrecked seemed to bear this out.

Nor has the motor of many cylinders solved the problem, although in the hands of a skillful driver it has been found possible to cover long stretches of country that would call for frequent changes of gear with the ordinary four-cylinder motor in the hands of the ordinary driver. Multiplication of the number of cylinders has undoubtedly marked a tsep toward the realization of the gearless, but whether it will in the end prove to be a step that will result in the achievement of this goal, or merely one taken in the wrong direction, remains to be seen. In the meantime, the long step that has been taken toward the development of electricity for the same purpose is of considerable interest. The idea of utilizing the power of the motor to generate an electric current which was reconverted into mechanical power through the medium of electric motors has been one that has appealed to investigators in this field for the past several years, and numerous systems have been devised, the majority of them involving the use of a storage battery, while the location of the motors has varied in others, being placed directly at the wheels in some cases, and directly behind the generator in others, a mechanical connection being employed in driving on the high gear in the latter case.

This is the form that has been adopted by the Electric Vehicle Company after close to two years' experimenting with various modifications of the system, during which period the new chassis has been put to continuous and severe tests under service conditions to bring out any latent defects such use would tend to reveal. As will be seen from the accompanying plan view of the new gasoline-electric chassis, the flywheel of the ordinary motor has been displaced by the generator which is direct connected to the crankshaft of the motor and which hardly occupies more space than the wheel which it displaces. In other respects the motor is of the standard four-cylinder vertical type employed on the Columbia cars. Immediately behind the generator the motor is placed, though, as already mentioned, there is no mechanical connection between the two on any but the high speed when the crankshaft of the motor and the propeller shaft terminating at the live rear axle become solidly coupled and both the dynamo and motor run dead.

The lower speeds, of which there are five forward and a reverse, are all provided by means of a small lever similar to the controller handle employed on street railway cars. This actuates the electrical controller connected to the generator and the motor and permits of the variation of the voltage and amount of current sent into the latter in order to obtain the range of speeds mentioned. This is effected by throwing the windings of the generator armature and field into different electrical relation with the armature and fields of the motor in order to avoid the use of a dead resistance which would merely waste the current at low speeds. No storage batteries are employed, thus greatly simplifying the power plant and the wiring as well as greatly reducing the weight, which has always been the disadvantage of cars on which it was a feature. The low speeds are used in starting, the motor being capable of a heavy overload, and when up to speed a clutch is employed to couple the motor and propeller shafts and the car runs exactly the same as one equipped with the usual change speed gear.



CHASSIS OF COLUMBIA GASOLINE-ELECTRIC CAR.

FRENCH GRAND PRIX AND THE GOVERNMENT

PARIS, Jan. 1.—Owing to persistent assertions in usually well-informed quarters that the French Government intended to withhold permission for the Grand Prix, the Automobile Club of France departed from its usual plan and sent a deputation to wait upon M. Clemenceau, President of the Council. In previous years a circuit has been first selected, and only when the various local and district authorities have given their approval to the scheme has the club asked for Government permission. Headed by the Baron de Zuylen, president of the A. C. F., the commission, consisting of Baron de Turckheim, Louis Renault, M. Darracq, M. Brasier, René de Knyff, M. Collot, and the Marquis de Dion, waited upon M. Clemenceau on December 26 and urged the necessity of an annual speed contest, as in the past. One of the arguments put forth was that if the race was abolished exportations would decrease. "Americans," declared the Baron de Zuylen, "only buy cars which have made a name for themselves, or, at any rate, only buy from those countries victorious in international contests."

The head of the Government having objected that the old regulations appeared to have rendered all the services that could be expected of them, and to no longer contribute towards the amelioration of touring or town cars, M. René de Knyff explained that with the new regulations limiting the fuel supply to 30 liters per 100 kilometers, it was hoped to obtain marked improvement in automobiles. Economy in fuel consumption, improvements in transmission, and reduction in the weight of chassis will, said M. Brasier, result from the new regulations.

M. Clemenceau was of opinion that the fuel consumption was high, and, before giving a definite and official reply, asked the club to prepare a report, giving the old and new regulations, and submit it for the examination of Government experts. He assured them that there would be no delay, and, immediately received, the report would be studied and a prompt reply given. By January 15, at the latest, the Government decision will be known. The committee will urge: (1) The commercial advantages which French constructors have obtained from races; (2) the progress made in automobile construction for a number of years owing to speed contests; (3) the attention which foreigners pay to the French Grand Prix, and the hope they have that this event may be forbidden in France. The A. C. F. is confident that M. Clemenceau, who has always shown himself liberally disposed towards automobilism, will grant the necessary permission.

Several circuits have been proposed, the latest favorite being one at Soissons, near Compiègne, one hour from Paris. The 1907 circuit must have good, wide roads with a very hard soil, must not be less than 38, or more than 60 miles round, have no control, neutralizations or grade crossings, must be near some important center with railway and lodging facilities, and must be as near Paris as possible.

Proposed Auto Legislation in the French Chamber.

When the 1907 budget proposal came before the French parliament a few days ago a strong effort was made by certain deputies to put a heavier financial responsibility on automobilists and the motor industry. An increased annual taxation on every automobile was first proposed, but rapidly abandoned. Would-be chauffeurs then received attention, a proposal being made to impose a tax of two dollars on every person applying for a license to drive an automobile. A stiff struggle took place between the motor and non-motor section before this was abandoned. There is a probability of the tax being brought up again on the next occasion. Finally two deputies of the Loire district, basing themselves on what takes place in Germany, proposed a graduated tax on all foreign machines entering France for touring. For four-cylinder cars the proposed scale was $2 per day, $12 per month, $25 for four months, and $50 for a stay of not more than one year. A formidable array of figures was brought forth to prove the importance of the train of gold left behind by foreign visitors, and after discussion the Chambre des Deputés decided, for the present, not to submit American millionaires to further imposition when traveling over the good roads of La Belle France. It is estimated that over 3,000 foreign cars toured in France last year.

A GOOD ENTRY FOR THE EMPEROR'S CUP

PARIS, Jan. 1.—With an entry list of 39 cars, likely to be increased by another dozen by the end of the year, the success of the race for the German Emperor's Cup on the Taunus circuit, June 14, is already assured. Fiat heads the engagement list, with Lancia, Nazzaro and Weillschott as her champions. Then follow Opel, Benz, Metallurgique, Bianchi, Mercedes, Adler, Protos, Minerva, Fahrzeug Fabrik, and English Daimler, most of them with three machines. On the closing of American mail France is represented by three Darracqs, to be driven by Wagner, Hanriot and Demogeot, one Mors and three Lorraine-Dietrich to be piloted by Duray, Rougier and Gabriel. Further French engagements are expected before final closing. Brasier participation will depend on the decision of the company directors to-day. N. Levavasseur, designer of the Antoinette motors, famous in motor boats and aeroplanes, gives hope of participating in the German race. Renault and Panhard, on the other hand, will certainly not compete.

Nominally a touring competition, the German Emperor's Cup is in reality a speed contest for machines with a cylinder capacity limited to 8 liters, and weighing not less than 1,175 kilos with racing body and tires, but without gasoline, oil, water or spare tires. The circuit will have a length of about 52 miles, to be covered six times, giving a total of rather more than 300 miles. Although the exact course has not yet been decided upon, it is certain that a portion of the 1904 Gordon Bennett circuit will be utilized. Three projects are before the German Club, and a final decision will be made early in January.

The course having the most chances of being accepted starts from Hamburg to Saalburg, Wehrheim, Usingen, Graevenwiesbach, Noettau, Einhaus, this portion being the 1904 Gordon Bennett course. At Einhaus, instead of turning to left, the road continues straight to Weilburg, and at the entrance to this village turns sharply to the left and returns by Essershausen, Ernsthausen, Schmitten and Ober to Hamburg. This circuit gives forty-eight miles to the round, which, being cover five times, makes a total distance of 240 miles. There are no controls or neutralizations. Unless state affairs intervene, the German Emperor will be present at the race bearing his name.

Final entries for the German race closed at Paris and Berlin on December 31, the entrance fee being 3,000 marks per car. Gasoline and tire stations on the course are rented at an additional 1,000 marks. It has been found necessary to close the entry list six months before the date of the race in order to leave time to choose a circuit suited to the number of cars engaged. Tires and gasoline men are allowed until May for engaging stations.

WHAT MASSACHUSETTS' GOVERNOR RECOMMENDS

BOSTON, Jan. 7.—In his inaugural address to the Legislature, Gov. Curtis Guild, Jr., made some very radical recommendations for new automobile legislation, and some which are not at all relished by the automobilist. His recommendations included one for a new tax based on horsepower, and one for an examination board before which every applicant for a chauffeur's license must appear. His recommendations in part were as follows:

"Another source of taxation that I believe to be equitable is this: that he who is especially responsible for the waste and damage of public property would pay for any unusual damage that he causes. The suction of the automobile tire, for instance, is the cause of exceptional damage to the roads of the Commonwealth. I recommend a tax on all motor cars proportionate to horsepower, the entire proceeds to be devoted to the maintenance of State highways. I firmly believe that such a tax would alike remove much of the present complaint against this mode of locomotion and would vastly add to the comfort of all who use the highways for any purpose.

"It is evident that in another direction the Highway Commission must be given ampler powers. The abuse of automobiles is not decreasing; it is increasing. No engineer can take charge of a steam boiler without an examination. A locomotive engineer must serve a long apprenticeship before he is put at the throttle, though he moves only over set rails, on a line where every vehicle but one like his own is a trespasser. The automobile chauffeur, without any examination, sometimes an overconfident young man, sometimes an inexperienced girl, is turned loose on the public highways in control of an engine nearly if not quite as dangerous as a locomotive. Not even a law as to right of way checks collisions with other vehicles.

"I recommend that, as the sailing vessel has the right of way over the steamer on the high seas, so the horse and pedestrian shall for like cause be given, as the weaker, the right of way over the automobile on crossroad and highway.

"I further recommend the establishment of a board of expert examiners for chauffeurs, acting under the Highway Commission. I recommend that no person, owner or chauffeur, without a certificate of examination in reasonable practical tests in motor management, shall be longer permitted to experiment with dangerous engines on the roads of Massachusetts, at the risk of the lives of the citizens of this Commonwealth."

What the Massachusetts Autoists Think About It.

Though many of the automobilists are inclined to wait a little before giving their opinion, there is a general feeling among them that something in line with the governor's recommendation for a board of examiners would be a good move. The examination should not be too drastic and searching, but it is admitted that it is too easy at present to secure a chauffeur's license. Even a strict examination, however, would not prevent reckless and careless driving, as some of the most expert chauffeurs are sometimes reckless and are often the fastest drivers. It is thought that the proposed examination should be more strict for professional chauffeurs than for owners.

In the matter of right of way the automobilists are also inclined to agree with the governor, although they would like to have a law, if it were passed, so administered as to make horse drivers and pedestrians obey the laws of the road as well as automobilists. It is feared that if a law were passed some horse drivers would interpret it to mean that they could monopolize the whole road to the exclusion of the automobiles.

In the matter of the horsepower tax, it is hard to find an automobilist who will agree with the governor. The automobilists point out that horsepower is an extremely variable quantity; that it has no direct relation to speed or weight, both of which factors are of the most importance in the effect of an automobile on the highway. It is suggested that if the State needs more revenue, and it is found constitutional to impose another tax on automobiles, an annual registration fee, the same for all machines, and an annual licensing fee for operators would produce the necessary revenue.

The Highway Commission in its annual report will ask for an appropriation of $50,000 additional for repairs on the highways for damage caused by automobiles, and it is to secure this additional money that the increased tax is proposed. In its annual report the commission will devote much space to a consideration of the effect of automobiles on the State road, but it will state that it believes that it is in a position to cope with the new conditions of traffic provided it has a sufficient appropriation. The commission will make only minor recommendations regarding the automobile laws, leaving the drastic recommendations to the governor and the special committee on taxation, which is preparing a report on possible sources of increased State revenue.

During the fiscal year ending November 30, 1906, the Highway Commission will report that the gross income from automobile registration and licensing of operators has been $33,087.50, an increase of more than $8,500 over the twelve months of 1905. The net income for 1906 was $19,587.50, an increase of almost $10,000 over the net income of 1905. During the eleven months of the new fiscal year of 1906 the commission registered 6,572 automobiles, 666 motorcycles and issued 151 manufacturers' or dealers' certificates. It issued in the same time 4,649 ordinary operators' licenses, 3,391 new professional chauffeurs' licenses, and 2,043 renewed professional chauffeurs' licenses.

The growth of automobile registration and the licensing of operators since 1903, when the first automobile law was passed, is shown in the following table:

CERTIFICATES OF REGISTRATION.

	1903.	1904.	1905.	1906.
Automobile	3,743	4,261	4,889	6,572
Motorcycles	....	....	533	666
Manufacturers and Dealers	100	80	102	151
LICENSES TO OPERATE.				
Ordinary Operators	3,907	3,585	3,736	4,649
Professional Operators	692	1,335	2,392	3,391
" " (renewed)	.....	.....	741	2,043

During the first two years the registration of motorcycles was not kept separately from that of automobiles. In 1903 the gross income from the business was $17,684. In 1904 it increased to $19,162, and in 1905 to $24,490.50. On account of the change in the fiscal year of the State, the figures for 1906 cover only eleven months, but the gross income in that time was $33,087.50. In the same time the expenses increased from $5,531 to $13,500.

NEW YORK'S GOVERNOR ON GOOD ROADS.

ALBANY, N. Y., Jan. 7.—In his first message to the New York State Legislature, Governor Hughes commented upon the importance of the good roads movement in the following manner:

"The constitutional amendment of 1905 authorized an indebtedness not exceeding $50,000,000 for the improvement of highways. For the first time the State has undertaken the construction and maintenance of roads in a systematic manner. It has been reported to me that surveys and plans for the improvement of about 2,500 miles of main roads have been approved by the various boards of supervisors throughout the State; that of these 2,500 miles about 800 miles have been constructed, and that in addition between 500 and 600 miles are under contract and will be completed during the coming year.

"With the exception of three counties, every county outside of Greater New York has petitioned for improved roads. It is of great importance that this work should go forward and that the system of main highways should be completed with expedition."

FRELINGHUYSEN ALMOST A STANDPATTER.

NEWARK, N. J., Jan 7.—Senator Frelinghuysen, author of the automobile law that has been beneficial or detrimental to New Jersey, according to the viewpoint, is inclined to make few changes in the present law. Interviewed by a *Call* reporter, the senator is quoted as follows:

"With reference to automobile legislation, you may say for me that I believe the bill passed last winter has been beneficial in its effects. While it was somewhat in the nature of experimental legislation, yet I believe it has demonstrated its usefulness, the main defect being, in my opinion, inadequate provision for the proper enforcement of the law."

The senator continued: "The bill, as originally presented, called for a force of twenty-one inspectors, one for each county in the State. Experience has demonstrated that this force is inadequate, and I am in favor of amending the bill by making an additional force of twenty-five inspectors, appointed to serve without pay. That this plan is feasible is demonstrated by the fact that some of the best inspectors under the old law were appointed from the ranks of the automobilists and served without pay. Already applications have been received from this class of autoists who desire proper observance of rights of highway."

Senator Frelinghuysen concluded the interview by remarking: "At present I do not see the necessity for any radical change. I am very much opposed to any change in the speed limit."

It is also understood that Commissioner Smith, of Trenton, who is chief of the department, has some notions regarding automobile legislation that he hopes to be able to have Senator Frelinghuysen draft in any amendments that may be made.

PROTECTIVE ASSOCIATION IN BALTIMORE.

BALTIMORE, Dec. 31.—At a well-attended meeting of the Automobile Club of Maryland, the Automobilists' Protective Association of Maryland was organized for the sole purpose of securing the amelioration of conditions that the automobilists claim are intolerably oppressive, in regard to the speed law. In the new organization there are neither membership fees nor dues, and all the members were pledged to use their influence for the election of officials who will give automobilists a square deal. The following officers were elected: President, Osborne I. Yellott; secretary, Charles B. Finley. An executive committee will be appointed by President Yellott in the near future. Whenever needful the league is to actively enter upon political campaigns to attain their ends, and will do everything in their power to right what they consider an injustice. The following resolution was unanimously adopted:

We, the motorists of Maryland, as a body, stand unequivocably in favor of the adoption and strict enforcement of such laws as are reasonably necessary to protect the public at large from the reckless and unreasonable use of the automobile on the public highways of the State, and to punish those who, by their handling of automobiles in any way endanger the safety of such public; but are unalterably opposed to any law or mode of enforcing the law which results in the punishment of an entire class of persons for the wrongful acts of a few of that class.

MINNESOTA TO HAVE SOME LEGISLATION.

MINNEAPOLIS, MINN, Jan. 7.—A new automobile law is being prepared for submission to the Minnesota legislature. The law is to be the joint product of the automobile clubs of Minneapolis and St. Paul, and will provide for a new system of registration for cars throughout the State. The law will also provide that large cars cannot be driven by persons under twenty years of age. A penalty will also be provided for proper punishment of chauffeurs who use cars without permission, and for the apprehension of those who pick up machines on the street.

The legislative committee of the Montreal Trades and Labor Council will request the Dominion Government to pass a law prohibiting the employment of youths below a certain age in driving delivery wagons or acting as chauffeurs of automobiles.

COMMENDS AUTOS FOR POSTAL USE.

WASHINGTON, D. C., Jan. 7.—A very interesting document is the annual report of Frank H. Hitchcock, First Assistant Postmaster General, and it is doubly interesting to the automobile world for the mention made of the use of automobiles in the postal service. That portion of the report is as follows:

"During the past year, for the first time in the history of the department, arrangements were made for the introduction of an automobile service in the collection of city mail. Under a contract that went into effect on the 1st of October last, two specially equipped automobiles are being utilized in the collection service of Baltimore. Favorable reports have been received regarding them, and the department is now planning for a similar collection service in several other places. It is believed that in large cities automobiles can be advantageously substituted to a considerable extent for the horse carts now employed so generally in collecting mail. By the use of automobile vehicles a much speedier collection service can be organized without added expense. Plans are now being considered also for the introduction of the automobile in other brances of the city postal system with the purpose of quickening, as far as possible, the handling of the mails. Unquestionably the motor vehicle can be made an important factor in the postal service, as it already is in other business enterprises."

VERMONT WANTS REGISTRATION RECIPROCITY.

MONTPELIER, VT., Jan. 7.—The principal features of the new automobile law, recently passed here by the Vermont legislature, are a speed limit of 10 miles per hour in cities, villages and thickly settled territory, and 25 miles per hour outside. The penalty for violation of this provision is $50 fine or ten days in jail, or both, for the first offense, and not over $200 nor less than $25 fine, or six months in jail for subsequent offenses.

The registration fee of $3 is for machines of 20 horsepower or less, and $5 for machines of over 20 horsepower, with an operator's license of $2. The fee for a distinguishing mark of a manufacturer or dealer is $25. Residents of other States or countries are not obliged to take out a license in this State if Vermonters are allowed a like privilege in the State from which the visitors come.

A penalty is provided for operating machines while in a state of intoxication, and the rear sign on the machine is to be illuminated at night or during a heavy fog by light from the outside. The new law is silent in regard to closing any of the State highways against automobiles, and has no impounding clause. It goes into effect on February 1.

40-H.P. LOZIER WITH NEW YORK SELLING FORCE.

In the car going from the Broadway salesrooms to the Madison Square Garden Show are C. A. Emise, S. Regar, W. S. Mead, P. C. Chandler, O. F. Thomas, Rene Beauchenien, and H. Michener, demonstrator.

THINGS DOING AMONG THE GARAGES.

Model Garage to Be Built at Little Rock, Ark.

A contract is about to be let by the Little Rock Auto Company for the erection of a handsome new automobile garage on the lot recently purchased by them at 311 West Third street. The building will be of pressed brick, two stories high, occupying a floor space of 52 by 118 feet, fireproof, and constructed according to the latest design for up-to-date garages. Inside arrangements will include offices for the members, ladies' separate waiting rooms and private lockers for customers. A compressed air machine for inflating tires will be installed with a line of hose running the entire length of the building, affording an easy means of inflating the tires to any machines as they may need it. There will be a fireproof oil house for lubricating oils and an underground tank for gasoline. An elevator and turntable will also be installed. E. P. Ladd is president, John F. Boyle, vice-president, and M. A. Treadway, secretary and treasurer, of the Little Rock Auto Company, with about thirty other Little Rock citizens as shareholders.

Pittsburg Will Have Two New Garages.

The Winton Motor Carriage Company's Pittsburg branch will begin at once the erection of a new garage to replace the one destroyed by fire a few weeks ago. The new building will have a frontage of 120 feet on Beatty street and will be three times the size of the old structure.

Manager McGiehan, of the Rainier agency, will open a down-town garage this month and will provide a good stopping place for owners of cars who drive into town in the morning or for out-of-town people who come into Pittsburg when touring and want a central place to stop.

Auto Inn Garage at Elyria, O., Increases Its Space.

N. R. Spear is now a part owner of the Auto Inn automobile garage, at Elyria, O., having purchased the interest of H. B. Hineline in that concern, and takes over the active management. The whole of the lower floor of the building has been secured and during the winter months facilities for the convenience of the trade will be installed.

BRIEF NOTES OF THE GARAGES.

Doud Brothers, of Chatsworth, Ill., automobile dealers, are preparing to build a new garage. They will carry agencies for the Buick and other cars.

It is reported that a garage 60 x 140 feet is to be built in Erie, Pa., at the corner of Sixteenth and State streets, or a building erected partly for garage use and partly for other purposes.

Kansas City, Mo., now boasts its first large electric sign as the result of the progressiveness of an automobile dealer. This is over Kingsley's garage and spells the latter word out in prominent letters.

Schwender Bros., Mankato, Minn., will shortly occupy the lower story of the garage building just completed for Fowler & Pay. It is of brick construction and is modern throughout in fitting and appointments.

Two recent additions to Philadelphia's garage facilities are the DeLancey garage, at Twenty-second and Pine streets and the Fifty-third street garage, at 420 North Fifty-third street, the latter under the management of F. R. Bayle.

A new building for the L. H. Fawkes Auto Company is to be erected in St. Paul, Minn., early in 1907. The plans have been drawn, and provide for a roomy garage, with a partial second story. The new place will be conveniently located on Sixth street.

Ballston Spa, N. Y., is to have another garage. It will be located at the corner of Front street and Milton avenue and will be in the shape of a two-story building of brick, erected by George West for Tracy W. Nichols. Cars will be handled on the first floor and the offices and machine shop will be on the second story.

A remodeled building of the three stories, on Sixth street, St. Paul, Minn., is to be occupied as a garage and salesroom by the C. P. Joy Automobile Company, which has operated on Minnesota street for two years. The Joy brothers control a big portion of the St. Paul trade, handling the Pierce, Packard, Franklin, Pope-Hartford and Waverley lines.

In order to accommodate its rapidly expanding business, the Acme Garage, Tacoma, Wash., has begun work on an addition measuring 50 by 100 feet, to be erected in the rear of its present establishment, giving a total floor space of 200 by 140 feet. In addition to representing two or three different makes of cars, the agency for a number of patented sundries has been obtained.

Jacksonville, Fla., is to have an up-to-date garage. L. C. Oliver, the local agent of the Ford Motor Company, of Detroit, Mich., recently bought out the Duval garage at 29-33 West Forsyth street, and will remodel the building in order to accommodate a much larger business. J. E. McCants, who conducted the Duval garage for the past four years, will be manager of the repair department.

The Citizen's Motor Car Company has just successfully concluded negotiations for the purchase of the northeast corner of Main and Seventh streets, Cincinnati, at a cost of $110,000, and will immediately begin the erection of a three-story concrete garage, to occupy the entire plot, which measures 93 by 130 feet, at a cost of $100,000. The company was recently incorporated with $100,000 capital, which will shortly be increased to $250,000. J. W. Tarbille, formerly with the Williams Valve Company, will be the general manager of the concern.

C. J. Bronson, who represents the Winton and Cadillac interests in Grand Rapids, Mich., has recently more than doubled the floor space of his garage at 42 to 50 Kent street by the addition of an annex 75 by 100 feet. This makes a building 100 by 125 feet on the ground floor and 50 by 100 feet on the second floor, the first floor being entirely clear, as it is unencumbered with posts. The Bronson garage is the largest Michigan's capital city can boast of, the next in size being that of the Richmon-Jarvis Company, at 11-13 Park street, with 12,000 square feet of floor space.

FAKE NUMBER TAGS AND CHAUFFEUR BADGES.

ALBANY, Jan. 8.—When Police Commissioner Bingham sent a representative to-day to ask Secretary of State Whalen for permission to copy the complete list of registered automobiles and chauffeurs in the State on file in his office, it became known that there is in New York a factory which turns out false badges for chauffeurs and false number tags for automobiles.

Executive Clerk James L. Mock, who was Commissioner Bingham's representative here to-day, told Mr. Whalen that the New York factory had turned out at least 10,000 badges for chauffeurs and numbers for automobiles. Only a few days ago, Mr. Mock said, the police arrested a chauffeur whose badge bore the number 26,000, while the highest chauffeur number on file at the office of the Secretary of State is 16,195.

There are about 40,000 automobiles and more than 10,000 chauffeurs registered here.

HOW THE LITTLE SPRING MOTOR RUNABOUT LOOKS.

AN AUTO FOR YOUNGSTERS.

The Elite Junior is a small automobile intended for the use of children, and its weight does not exceed sixty pounds. This miniature car is equipped with artillery wheels and ball bearings, pneumatic tires, oil lamps, horn, number tag, and an imitation coil box. Instead of a gasoline engine or electric motor, it depends upon a large steel coil spring for its source of energy. The speed of the car is never greater than five miles an hour, while the power is being used, and it is extremely simple to operate, there being only two foot pedals that need attention. The spring motor is wound up by a crank handle, and is so geared that it becomes very easy for a child to wind. The car is designed upon the lines of an up-to-date runabout.

MICHELIN HAS NEW AMERICAN AGENT.

E. Lamberjack, of Paris, who for a long period has been the export agent for the entire product of Michelin et Cie. of France, is at the present time in New York City, and has formed a company and taken over all the rights, effects, and good will of the Michelin Products Selling Company, Inc., of 31-33 West Thirty-first street, New York City. The new concern will be known as E. Lamberjack & Co., Incorporated, and will occupy the offices and salesrooms heretofore occupied by the Michelin Products Selling Company.

Under the new arrangement Michelin et Cie. will deal directly with their patrons in America, through the new house. One of the innovations will be a material reduction in the price of Michelin tires, which has been brought about through this arrangement.

NEW CORRESPONDENCE SCHOOL FOR OWNERS.

Makers generally have long realized that one of the chief causes at the foundation of most of the minor troubles encountered by the average autoist, is to be found in the ignorance of the latter. In other words, the automobile is one of the few pieces of machinery that is permitted to fall into the hands of men with practically no technical knowledge or experience. Various makers have appreciated the need of a better knowledge of the mechanism of their own cars on the part of those who purchase them or are to drive them, and have provided instruction of one kind or another, but efforts in this direction have not been attended with flattering success in every instance.

The Maxwell-Briscoe Motor Co. is about to enter this field in a totally novel manner. It has added a department to be known as "The Correspondence School of Motor Car Practise" for the benefit of owners of Maxwell cars principally, though others may benefit by it as well. The course consists of a series of lectures, supplemented by the text-book "The Making of an Automobilist," and other pamphlets on special subjects. The school will be conducted by H. A. Grant, and will include among its other features a "Question Department." The cost of the complete course where owners of Maxwell cars are concerned, has been merely made to cover the cost of printing, while for others it is slightly higher.

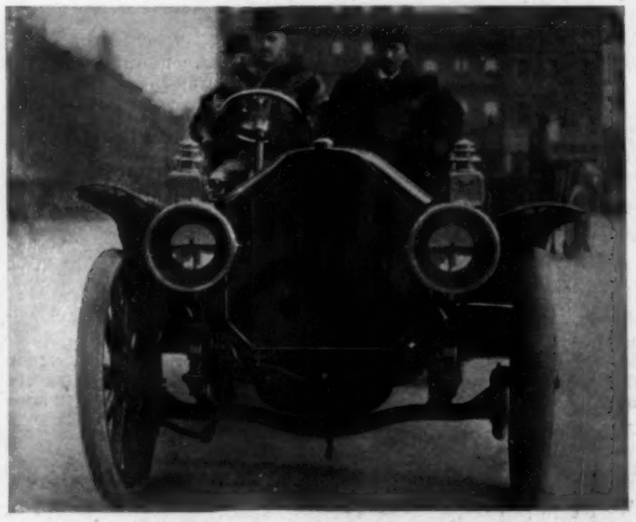
ALCOHOL TOO HIGH FOR PRESENT MOTORS.

As was predicted by the knowing ones last spring, when the legislation relieving alcohol from taxation which went into effect on the first of the year was being promulgated and its optimistic supporters were prophesying the relegation of gasoline to the background, Joe Tracy's recent 100-mile run, using the new fuel, proved that while its use is perfectly feasible in the present-day motor, it is far from economical. Speaking of his experience with it, Tracy said that "aside from the price of the fuel, I found that a very much larger quantity of it was needed than of gasoline. We used about three times as much alcohol as we would have required of gasoline to do the same work. We did not get quite as much power. This, of course, was due to the fact that the compression was not high enough. Had we been using an engine built to use alcohol we could have done much better."

In addition to the explanation afforded by the above statement, it must be taken into consideration that the test was carried out under the most adverse conditions and that, aside from recording the total quantity of fuel consumed, no data of any kind was taken. There is little doubt that with a specially designed engine using high compression and long stroke and the lower price of the fuel that is bound to come when it has been on the market longer, a far more favorable showing would result. As it is, the chief fact of importance established by the test is that alcohol may be used in the standard motor without any changes whatever, and this alone is of considerable interest.

POPE COMPANY TOO BUSY FOR RACING.

TOLEDO, O., Jan. 7.—The announcement of the Pope Motor Car Company, through H. S. Leyman, assistant manager, that it will not participate in racing events this season, will come as a distinct surprise to those who have followed automobile racing since its inception. The Pope Motor Car Company has always been an aggressive competitor in every event in which it has entered, and has always been one with which to reckon, as the many trophies which adorn the company's office will testify. No reason is assigned for the decision to eliminate racing this season, but it is probably due to the heavy demand for standard cars, which is taking every possible effort the company can make.



A. G. SOUTHWORTH, NEW YORK POPE REPRESENTATIVE, IN HIS POPE-TOLEDO.

NEWS AND TRADE MISCELLANY.

New machinery is being added by the Swinehart Clincher Tire and Rubber Company, of Akron, Ohio, which will allow an increase of 50 per cent. over present output.

E. P. Moriarty & Co., of Kansas City, Mo., are looking for a licensed car of popular price to add to their line. They are in the market for something to sell at less than $2,500.

Starting at exactly 12:01 on the morning of January 1, Manager Thomas Hay of the Chicago branch of the Ford Motor Company claims the first 100 miles run of the year in the new 1907 six-cylinder Ford touring machine.

Plans have just been begun for a new building to be added to the Mason Motor Car Company's plant at East Fifth and Vine streets, Des Moines, Ia. The addition will be two stories high, 44x100 feet, and will be metal sheeting.

The records of the license clerk in the office of the city clerk at Cleveland show that 956 automobile licenses were issued by the city last year, indicating that between $2,000,000 and $3,000,000 was spent for automobiles in the Forest City last year.

An increase from $200,000 to $1,000,000 has been made in the capital stock of the Glidden Varnish Company, of Cleveland, O., to meet increasing business and provide for further extensions. The company's new factory is rapidly approaching completion.

The Hayes Manufacturing Company, of Detroit, Mich., states that it is incorrect that their plant, or any part of it, has been removed to Lansing. A branch has, however, been opened at Lansing in the Olds gas engine plant to take care of the firm's increased volume of business.

Behen-Faught Motor Car Equipment Company now occupies the entire first floor at 3961 Olive street, St. Louis, next to the Diamond Rubber Company agency. Dustproof fixtures are specialized. Jno. J. Behen, George Maynard Faught, Ed. S. Studer, S. F. Behen comprise the executive staff.

Mrs. J. H. Cuneo, of Richmond Hill, N. Y., has just placed an order with the Rainier Company for a 35-horsepower Rainier car, which will be delivered to her in March. Mrs. Cuneo has achieved distinction in numerous race meetings and was the only female driver to compete in the 1906 Glidden Tour.

A site has been purchased and the erection of a new factory building commenced at 9 Center street, Detroit, for the Ross & Young Machine Company, doing business at 133-135 Farmer street in automobile parts and general machine jobbing. The firm expects to begin business in their new plant about March 1.

Owing to increased volume of business the Piqua Blower Company, of Piqua, Ohio, is being incorporated under the laws of that State with a capital of $50,000. This corporation will take over the interests of the Piqua Foundry and Machine Company and will make a specialty of positive blowers and gas exhausters.

In response to recent advertisements, orders for 25 car loads (100 runabouts) were received in one day, December 24, by the Ford Motor Company. Immediate delivery of Ford machines is guaranteed by the firm's system of running the factory at its full capacity every week in the year. The December output of the factory was 42 cars per day; on January 2 it was increased to 50 per day.

Colonel Edward S. Fowler, appraiser of the port of New York, states that during the year 1906 1,561 automobiles, including 128 domestic cars, of the total appraised value of $5,488,690.11 were imported at this port, the corresponding figures for 1905 being 1,054, including 80 domestic cars, valued at $3,972,297.31, and for 1904, 602 cars, valued at $2,209,492.11.

W. Hildreth, manager of the Holsman Automobile Company, of Chicago, states that on January 21 the price of their Model No. 9 machine will be advanced to $700 and their Model No. 10 to $750. The firm's new factory, first occupied eight months ago, is now working to its full capacity, and more space will soon be planned. In 1907 the output will be from 1,500 to 2,000 machines.

Last week G. W. Gammack ran a regularly equipped stock model electric Columbia victoria-phaeton 75 7-8 miles on one charge of the battery, averaging a speed of fifteen miles an hour. This is the highest mileage recorded in any of the company's tests, and speaks conclusively for the superiority of this model. Mr. Gammack was handicapped over most of the distance by a driving rain.

The Hartford Rubber Works Company, of Hartford, Conn., has received the following letter from Clarkson Limited, motor car and omnibus manufacturers of Chelmsford, England: 'We think you will be gratified to learn that one of the 34"x3½" tires originally supplied to us by you has now done about 27,000 miles upon a 16-passenger omnibus, and is still running. T. Clarkson, Managing Director for Clarkson Limited."

In the past year the Autocar Company of Ardmore, Pa., has installed 46 pieces of new machinery in their machine shops. One of the largest and most important pieces is a Landis crankshaft grinder which alone cost $1,800. The nicety of the construction of this machine may be better understood when it is known that the Autocar system of factory tests requires each crankshaft bearing to be ground to the fineness of a fractional part of one thousandth part of an inch.

The Allyne Brass Foundry Company, of Cleveland, has now three plants running in full operation at Cleveland, Buffalo and Detroit, making it one of the largest producers of brass and aluminum castings in the world. Work has been commenced on additional buildings on the Detroit plant. Pierce Smith, formerly of the J. D. Smith Foundry and Supply Company, of Cleveland, is now connected with the Allyne Brass Foundry Company, and is representing them on the road.

The Minneapolis tire show became a one-day affair, January 5, instead of three days, as planned. The refusal of the tire manufacturers to allow northwestern representatives to exhibit resulted in the confining of the show to local repair houses and manufacturers and retailers of accessories. The big room of the clubhouse was well filled during the afternoon and evening. Exhibits were made by L. H. Fawkes & Company, the J. N. Johnson Company, O. Fenstermacher & Company, the Evans Motor Car Company, and W. P. Shattuck.

The new four-story branch house of the Winton company, on Sherman square, Broadway and Seventieth street, New York, is one of the finest automobile establishments in the world. The building contains 84,000 square feet of floor space, and, having been constructed exclusively for automobile purposes, has every conceivable up-to-date facility. The manager of this establishment, C. W. Churchill, was formerly a Clevelander. His elevation to the New York management illustrates the Winton idea of giving preference in appointments to men in the Winton ranks.

The entire 1907 output of the Autocar Company, of Ardmore, Pa., has been sold to the following dealers: Geyler & Levy, Chicago; Middleton Motor Car Company, San Francisco; Fred S. Smith, Boston; Williamsburgh Auto & Storage Company, Brooklyn, N. Y.; Motor Car Company, of New Jersey, Newark; Thomas & Lowe Machinery Company, Providence; J. H. Brady Auto Company, Detroit, Mich.; Palace Auto Station Company, Hartford, Conn.; R. V. Conneerat, Savannah, Ga.; Citizens Motor Car Company, Cincinnati, Indiana Automobile Company, Indianapolis; Mr. Vernon Car Company, Baltimore; O. L. Barringer Company, Charlotte, N.C.; Colburn Auto Company, Denver, Col.; U. S. Automobile Company, Rochester, N. Y.; Wilmington Auto Company, Wilmington, Del.; Harry R. Hoppes, Westchester, Pa.; Norris Auto Company, Saginaw, Mich.; Youngs & Company, Newburgh, N. Y.; Autocar Sales Company, New York City; Standard Auto Company, Cleveland; Broadway Auto Company, Seattle; August Stocker, Salt Lake City; Cook Auto Company, Portland, Ore. One hundred cars have been reserved for the Philadelphia branch. The factory is now running night and day in order to make prompt deliveries.

NEW AGENCIES ESTABLISHED.

The Auto-Motor Car Company, 804 Sycamore street, Cincinnati, has taken the agency for the Rainier for southern Ohio and eastern Kentucky.

The Newark Rubber Tire Company, of Newark, N. J., has opened a repair department at 266 Halsey street, under the management of John F. Moran.

D. P. Nichols & Company, the newly appointed agents for the Frayer-Miller in Boston, have opened a salesroom in the Motor Mart, Park Square, that city.

The Franco-American Auto and Supply Company, 1404-1406 Michigan avenue, Chicago, has been appointed selling agent and distributer for the Michelin tire for the central and middle west.

The Bonney Motor Car Company, of Kansas City, Mo., has taken the garage at 1112 Locust street, formerly occupied by the Western Automobile Company. The company is Kansas City agent for the Wayne.

The Keystone Auto Company, of Pittsburg, Pa., has decided to open a downtown salesroom in the new Fulton building on Sixth street, where it will display its line, consisting of the White, Welch, Ford, and Stoddard-Dayton.

A permanent office has been established in Chicago, by the Willard Storage Battery Company, of Cleveland, to take care of its western automobile battery trade. The office is located in room 1535, First National Bank building.

E. L. DeCamp, of Kansas City, Mo., has taken the sales agency for the entire output of the Mason car, built in Des Moines, Ia. The car is of the double opposed two-cylinder type and has shown up well on the hills of Kansas City.

The Big Four Automobile Company, of Los Angeles, Cal., recently organized by C. S. Anthony, T. Morehouse, and Walter Heist, has secured the agencies for the Marmon and Monarch cars, and opened a salesroom at 110-14 East Ninth street.

Frank Bales has taken the agency for the Cadillac in Kansas City, Mo., and for the present will find quarters near Fourteenth on Walnut street. Later in the season he will erect a roomy garage at Admiral boulevard and Grand avenue, opposite the Midland hotel.

Chas. F. Kellum & Co., manufacturers of the well known Invader oils, have opened a retail branch at 648 North Broad street, Philadelphia, and another one at 715 Seventh avenue, New York City. The home office and warehouse of the company will remain at 128 Arch street, Philadelphia.

Agencies for the Jackson line have been placed by Ralph Temple, the Chicago representative, with C. H. Farnum, Baraboo, Wis.; Manly Brothers, Harvard, Ill.; and Jacob Dreishire, for Sandwich, Somonauk, and Plano, Ill. Thompson & Lipscomb, will represent the Jackson at Lacon, Ill.

The W. & N. Valve Lifter, described in the December 6 issue, is now controlled by the Auto Specialty Company, Chicago, A. J. Jackson, manager. This concern is also the general selling agent for the Standard Lamp Company, and has the Western agency for Gilt Edge polish and other specialties, and is adding new lines rapidly.

Lyons & Company, Grand Forks, North Dakota, have been appointed agents for the Franklin and Cadillac for the northern part of that State. This house handled the Franklin last year, and have recently taken on the Cadillac, also the agency for Indian motorcycles. They do an extensive supply business, covering all the territory west of Grand Forks to Montana.

That individuals and tradesmen may receive prompt attention and deliveries, the Hartford Suspension Company is establishing agencies in various parts of the country. Among those recently established were The Springfield Automobile Company, Springfield, Mass.; the Dominion Automobile Company, Ltd., of Toronto, Winnipeg, and Montreal, for Canada, and the Chanslor & Lyon Motor Supply Company, of Los Angeles and San Francisco, for California.

A new departure by the National Battery Company, of Buffalo, is the establishment of the National Battery Depot, at 271 Michigan avenue, Chicago, with George S. Berger in charge. A complete stock of electric vehicle and sparking batteries and parts will be carried, so that prompt renewals and repairs can be made of any standard sized battery as well as the National. The company's Chicago sales offices will remain, as heretofore, at 450 Old Colony building, in charge of Bertram Smith.

RECENT TRADE REMOVALS.

On January 1 the Chicago branch of the Rainier Company removed to its new salesrooms and garage, located at 1725-7 Michigan avenue.

The Jones Speedometer has moved its Boston office to 109 Massachusetts avenue, near Boylston street. Manager A. L. Lucas will remain in charge.

The Coppock Motor Car Company, recently organized, has purchased the Murillo Motor Car Company and is incorporated at $100,000. Light and heavy motor trucks for delivery wagons will be constructed, and it is the intention of the company to build pleasure vehicles later. Officers of the Company are M. Earle Brackett, president; W. M. Myers, vice-president; H. F. Reynolds, secretary; Harry Ward, treasurer; H. W. Coppock, general superintendent.

All manufacturing of Ajax tires will hereafter be done at the Trenton, N. J., plant, the New York factory having been moved to Trenton, where the Ajax-Grieb Rubber Company's assembled plants now are. General offices have been opened at Fifty-ninth street and Broadway, New York City, pending the completion of the company's new offices which will be ready about February 1. The offices of the president and the sales department are now located at Fifty-seventh street.

PERSONAL TRADE MENTION.

At a meeting of the board of directors, held January 2, Nicholas Guy Roosevelt was elected treasurer of the Dragon Automobile Company, of Philadelphia.

Owing to press of other business, O. E. Seager has retired as vice-president of the Jackson Auto Company, of Kansas City, Mo., although retaining his stock. His place will shortly be filled.

Joseph F. Gunther, manager of the Chicago branch of Thomas B. Jeffery & Company, is enjoying a three weeks vacation in Mexico. He will journey as far south as the capital city before he returns.

Raymond Martinez Hernandez has been appointed western agent for the Continental Caoutchouc Company, and will have charge of all the territory west of Chicago, with the exception of California.

H. F. Siegrist, formerly treasurer of the Swinehart Clincher and Rubber Company, of Akron, O., has severed his connection with that concern, and is succeeded by Frederick Boron for the unexpired term.

J. A. Swinehart, of the Swinehart Clincher Tire and Rubber Company, of Akron, O., who has been in Europe since the middle of December, is expected to return about January 15. He reports a giant stride in the Swinehart tire outlook abroad.

The latest accession to the ranks of the Dragon Company is Al Poole who is best remembered as the mechanician who rode with Joseph Tracy in all his Vanderbilt races. Poole is an expert mechanic and tester and will prove a useful addition to the Dragon forces. He recently rode with Joe Tracy on the alcohol test of the Dragon car held on New Year's Day, and is now working with the latter on engine tests.

Recent changes in the personnel of the managers of the branches of the Diamond Rubber Company, include the appointment of C. H. Smith as manager of the Chicago branch at 1523-31 Michigan avenue, and W. P. Cronin as manager of the New England branch at 174 Columbus avenue, Boston. Both Messrs. Smith and Cronin have had extended service with the Diamond company as salesmen in the territories over which they are to preside, and are thoroughly familiar with local conditions and requirements.

NEW TRADE PUBLICATIONS.

From the Outcalt Manufacturing Company comes a colored tear-off calendar illustrating a familiar roadside scene in summer.

"Trophies Won" is the frontispiece of the Jackson Automobile Company's catalogue describing the firm's different models for 1907.

By text and design the brochure issued by P. M. Hotchkin, 4021 Lake avenue, Chicago, shows the vibrations of a car with and without the Hotchkin anti-jolt device.

"Just a Moment," a scene at a railroad crossing, is the catcher with which S. F. Bowser & Co. holds up the motorist for a second to instruct him in the proper methods of handling and storing gasoline.

The Corcoran Lamp Company's tear-off calendar will certainly be retained and hung up in every office in which it is received. "The Signal," the central embossed and colored design, is a highly artistic piece of work.

Tinkering is not recommended, but the Pope Motor Car Company believes that any intelligent man can take care of Pope-Waverley electrics with a little instruction, and has issued a booklet of instructions to meet this end.

Light is cast on the subject of automobile and portable reading lamps by the Avery Portable Lighting Company's booklet just received. It shows how the Autogas tanks will light up the road before you or prove of use in country homes.

Elegance has been sought and attained in the Detroit Steel Products Company's hanging calendar for 1907. On a plain brown ground a maiden fair and wondrous beautiful presents the products of a fruitful autumn. Embossed and artistically colored, the calendar will rank among one of the best of the season.

A very comprehensive and practical automobile handbook, in the German language, has been published by M. Krayn, 11 Kurfurstenstrasse, Berlin, under the title "Automobiltechnischer Kalender und Handbuch der Automobil-Industrie fur 1907." The book was compiled from all available reliable sources by E. Rumpler, a well-known Berlin engineer, and explains and illustrates the construction of gasoline, steam and electric automobiles and their component parts, and also takes up in detail the subject of motor boats. Instructions are given for caring for automobiles of various types and practical hints given on their care and maintenance. The book includes a calendar, with blank spaces for notes, and a series of useful mathematical tables for handy reference; also rules for making various calculations required in automobile and motor work.

A SIMPLE FORM OF CAR.

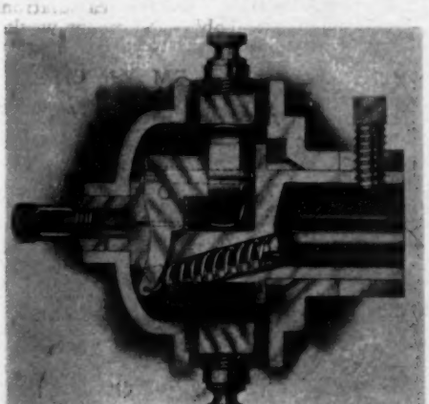
The Auto Buggy presented by the Success Auto Buggy Manufacturing Company, of 530-540 De Baliviere avenue, St. Louis, Mo., is an automobile in its most simplified form. Briefly, it consists of a buggy carried on a V-shaped steel angle-iron frame with 37-41 or 40-44 wheels, either rubber or steel shod. The motor is a two-cylinder air-cooled type, 4 inches bore by 4 inches stroke, with fan in fly-wheel and positively balanced to avoid vibration, and is carried on the side of the buggy, transmitting power to rear wheels through a side chain without the intervention of a differential. Planetary transmission is employed with connecting rods and levers which are operated by pedals on the inside of vehicle. There is a 14 inch stationary steering wheel guaranteed not to rattle. Dickinson ball-bearings are employed for the road wheels, and are guaranteed absolutely water-tight. The importance of this cannot be overestimated for a machine employed on rough work over wet and sandy roads. The chief feature of the buggy, however, is the direct transmission, without differential, the invention of John Clark Higdon.

INFORMATION FOR AUTO USERS.

Quick-Acting Wrench.—There is a vast amount of time lost in adjusting monkey-wrenches, and there are plenty of men who have done this by the roadside on a cold day who have wished for something less tedious than the apparently endless screw arrangement. To meet this demand the York Electric and Machine Company, of York, Pa., has brought out the Yemco quick-acting adjustable wrench. In general appearance the Yemco wrench is much like the well-known adjustable wrench; but in the sliding jaw is a little button. Press this button and the jaw can be slid to any desired point, and on releasing the button will be held there securely. One advantage of this wrench is that it can be manipulated with one hand. It has another important feature. The jaw can be placed in any position, and its position can be changed by the most minute degrees—there are no fixed points of engagement. The worm which takes the place of the usual thumb worm turns easily and automatically as the jaw is moved up or down.

YEMCO QUICK-ACTING WRENCH.

Quad Ignition Timer.—The ingenious timer illustrated herewith is the product of the Quad Manufacturing Company, of Columbus, O., and embodies a number of features that make for durability and accuracy. The illustration is so clear that the construction is easily understood. The shaft has two bearings, front and back, so that there is no tendency to bind and wear unequally. The peculiar form of the shaft, cut away at one side, permits the use of a very large roller, of hardened steel, running on a hardened steel pin. This insures long life to the wearing parts, as the roller rotates at comparatively low speed. Moreover, there are special means for constant lubrication, a dustproof oil hole opening into a little reservoir from which oil flows through suitable ducts to the bearings. While the Quad timer is of very compact build, the roller is of maximum size and the shaft and its bearings are very large indeed for the work they have to do. The dome-shaped cover is of polished aluminum and carries the front bearing; the back piece is of gray iron, and in it is formed the main bearing. Insulation is of fiber and the contact blocks of steel; the shaft, carrying the steel roller, is of bronze. The arm carrying the roller is on a pivot and the rounded face of the roller is pressed against the contacts by a spiral spring attached to the opposite end of the arm. A felt oil retainer keeps the oil where it belongs and excludes dust. To remove the cover it is not necessary to take out the two retaining screws; they are merely loosened and the cover slightly rotated, when it can be removed, the screw heads passing through holes cut for the purpose.



CROSS SECTION QUAD IGNITION TIMER.

"Ever Ready" Autometer.—There is a marked tendency among automobilists to clear the dashboard as much as possible. Thus the Ever Ready, combining minute and second clock, speed indicator, and season and trip record is likely to meet with favor among up-to-date automobilists. The instrument has a 4 inch dial, figures are large, distinct and proportional and can be read at a glance from the back seat or from any other part of the car. The mechanism and governor, working on the principle of centrifugal force, are theoretically and practically correct. There are no soldered joints or loose pieces and the apparatus is inclosed in a solid bronze dust and waterproof shell. The 65 miles universal indicator above described, complete with flexible shaft, gears, etc., is listed at $75 by the Auto Improvement Company, 316 Hudson street, New York. Another instrument handled by the same company, without the clock, registers up to 9,999 miles for the season, and 999 9-10 miles for the trip, and is sold at $70 complete. All Ever Ready speed indicators are mounted on patent adjustable brackets, allowing the instrument to be turned to right, left, face up or down, as may be desired by the operator.

FACE VIEW EVERY READY AUTOMETER.

An Effective Non-skid.—The Midgley Wire Grip is not a new tire, as some have seemed to think, but an effective non-skid arrangement, originated by The Hartford Rubber Works Company, consisting of five endless coils of spiral wire embedded in the flat tread a short distance from and parallel with each other. In practice each of these coils presents a minute wearing surface flush with the outer rubber in the tread. Now the more the tire wears down the better the non-skid device works, because each one of the coils is practically an inverted staple, taking direct and positive hold of the road or street surface over which it passes.

MIDGLEY WIRE GRIP TIRE.

This is an absolute preventive of side-slipping under any and all conditions. Furthermore, the wire coils are so arranged that they have a slight co-operative action with the rubber, and thus subtract nothing from the resiliency of the ordinary pneumatic. While this construction prevents skidding, it adds to the "life" and wear of the tire. A Hartford Dunlop, or Clincher, fitted with the Midgley Wire Grip, is sold at an average advance of 25 per cent. over the plain casings.

The Hartford Rubber Works Company now offer to American owners of high-grade foreign cars Clincher tires made in millimeter sizes, exactly fitting the rims on all types of foreign cars.

For the first time non-skid devices are available in millimeter sizes incorporated into the tread itself. At the present time they are prepared to supply 12 different sizes but their factory is equipped to turn out any others for which sufficient demand is had.

The dimensions of these tires are not approximate, but exact. They will fit perfectly the rim on foreign cars, requiring no costly or time-consuming delays when that equipment is decided upon.

A Novel Guideboard.—It is pretty hard lines to find a guideboard so faded out that the lettering is almost invisible, especially if one is in an automobile and the weather is bad and the light failing. It's a case of getting out in the mud or snow and going up to the board to puzzle out the dim directions. A new kind of guideboard has been invented by W. P. Harmony, of 627 Franklin avenue, Sidney, O., to avoid this trouble, and it is called the Fadeless Guideboard. The

letters are formed by series of cup-shaped indentations in the wood, painted a color contrasting with the paint on the rest of the board; the hollows hold the paint and protect it from the effects of the weather. Even without any paint at all the inventor states that these signs are perfectly legible, and that nothing short of the destruction of the board will deface the inscriptions. The wood used is cypress, and boards are sent out with lag screws for attaching to posts. They cost no more than the ordinary type. Protecting ledges are placed at the ends and top.

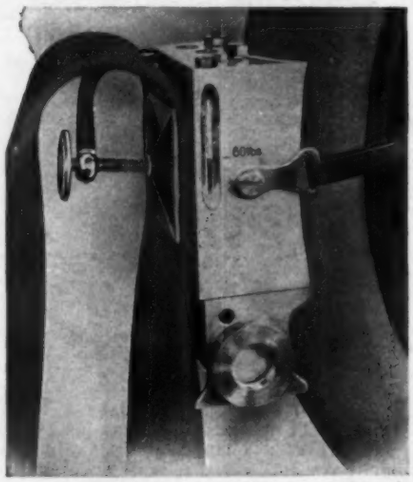
Stewart Speedometer.—As a proof of the care which is bestowed on the construction of the Stewart Speedometer, a five years' guarantee is given by the manu-

FRONT VIEW OF THE STEWART.

facturers, the Stewart & Clark Mfg. Co., 69-71 Wells street, Chicago. Having no fragile mechanism, no delicate hair springs, brass sliding parts, or soldering, the speedometer can be relied on to indicate accurately speed and distance traveled over all kinds of roads. A feature of the Stewart apparatus is a flexible shaft made of steel links that hook one into the other without riveting or splicing and which is guaranteed not to crystallize or break. While practically indestructible, in case of accident it can be easily repaired in a moment's time. Extra hooks are supplied and it requires no tools to make the repair. The shafts are mounted on ball bearings of extra quality and finish. Pivots and other bearings are mounted in hardened steps, and both steps and pivots are highly polished to reduce friction. All swinging members are mounted on long hardened pivots with step bearings. The Stewart universal joint allows the flexible shaft to hang at any angle; it obviates short bends and prevents the shaft from crystallizing and breaking.

Double Swivel Vise.—It is often necessary, when the automobilist is so unlucky as to be forced to make roadside repairs, to do all kinds of stunts to hold a bit of metal steady enough to file; and it is a very difficult matter to file off more than a very small amount of metal while holding the work by hand. Some kind of a vise would be just the right thing, and the Pittsburg Automatic Vise and Tool Company, of Pittsburg, Pa., has brought out a vise exactly suited to these conditions. To the running-board or step of the car is attached a small and unobtrusive base, which is a fixture; and the vise is attached to this, when it is to be used, and at other times is safely packed away in the toolbox. There is no complication about the insertion of the vise into the base—it is simply set in the socket, in which it is perfectly free to turn in a complete circle. As soon as the jaws are tightened on a piece of work, however, the vise is automatically clamped in its base and cannot move. Release the work and the vise is again free to swivel. There is another swiveling motion. The jaws can be swung clear around on the axis of the screw, and, as in the case of the horizontal movement, the tightening of the jaws on the work clamps the swivel automatically. These movements make it possible to get the work into almost any imaginable position for convenience of access in filing and so on. The vise has 1 3-4-inch jaws, opening 3 1-2 inches, weighs 3 1-2 pounds and is nickel-plated. The parts subjected to stresses are of alloy steel and the screw is a steel forging; all parts are interchangeable. The company also makes shop vises of all sizes on the same principles.

New Vulcanizer.—Engine troubles in these days are rare, but tire difficulties still remain with us. With the Ever Ready Vulcanizer, controlled by the Auto Improvement Company, 316 Hudson street, New York City, the automobilist is able to quickly and easily make any and all kinds of repairs to inner tubes, repair all cuts, sand blisters, and sections of tread, without removing the shoe from wheel. The distinguishing feature of the Ever Ready system of vulcanizing consists in the use of a special rubber compound, which is used

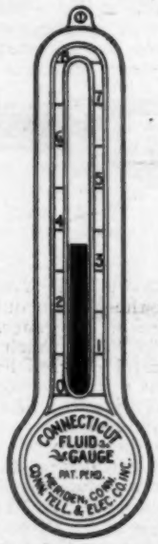


EVER READY VULCANIZER.

to fill in all punctures, blow-outs, cuts, or sections of tread, which have been removed or become detached from the canvas, and in all cases dispense with the use of patches and with the reuse of any of the old rubber, which has been removed, hence the damaged portion is in every case provided with absolutely new rubber.

The apparatus is made of tempered aluminum, is very portable, weighs only 3 1-2 pounds and is provided with a full set of tools, materials, book of instructions, and a fiber carrying case.

A Handy Gasoline Gauge.—The Connecticut is a little instrument to be screwed on the dash in front of driver and indicates the amount of gasoline in the tank by a column of colored fluid ascending and descending between a graduated scale. In principle it is simple, the gauge consisting of a reservoir to which is connected a small pipe about one-eighth of an inch in diameter, the other end of the pipe being connected to a proportioned tube which



CONNECTICUT TANK GAUGE.

passes through the top of the tank. In the gauge proper there is a glass tube which passes down to the bottom of the reservoir in the gauge. When the fluid in the gasoline tank is raised it creates an air pressure in the tube mounted therein, which is transmitted to the surface of the liquid in the gauge reservoir. As the supply of gasoline decreases the air pressure diminishes and a corresponding fall in the liquid ensues. The gauge is very easily fitted, the connection to gasoline tank being a semi-flexible seamless drawn tube one-eighth inch diameter soldered into tank. It will be noted that no gasoline passes into the gauge itself, consequently there is no danger from this source.

Handy Electrical Contrivance.—The American Electrical Novelty Manufacturing Company, 304-8 Hudson street, New York, has produced an ingenious and simple battery wire connector, the nature of which will be readily understood on reference to the accompanying right-hand cut.

To attach the wire is but a moment's work; for it to disconnect owing to vibra-

SELF-ADJUSTING WIRE CONNECTION

tion or road shocks, is practically an impossibility. Several size Ever Ready cells are made. Style K, 3 x 7 inches, of 27 to 30 amperes, and style J, 2 1-2 x 6 inches, of 22 to 25 amperes.

German Ball Bearings.—Annular and thrust bearings manufactured by Fichtel & Sachs, Schweinfurt A. M., Germany, will occupy space 27 at the Madison Square show. F. & S. bearings have a high reputation in Europe, being employed by such firms as Daimler (Mercedes), Darracq, Fiat, Isotta Fraschini, Adler, Opel, Benz, English Daimler, Napier and Wollsley. Though only recently introduced into the States, they are being extensively adopted by American constructors. The Fichtel & Sachs annular ball bearing consists of two concentric rings of races, grooves in the races, steel balls running in the grooves, and a cage (made in two sections and

F. & S. BALL BEARING.

permanently joined together) containing and positively separating the balls equidistant and keeping them in perfect alignment. The bearing is of steel of an exclusive analysis. Each bearing has a complement of more balls than will fill one half its circumference. The rings, or races, are each provided with obliquely cut grooves which, when brought into proper relation, will permit of the introduction under pressure of additional balls. When working under a strain the balls cannot escape from the race in reverse action to their introduction, for the circumferential action of the balls is opposed to the direction of one of the oblique grooves, the permanent alignment provided by the cage prevents displacement, the depth of the race grooves is much greater than the depth of the oblique cuts, and every ball is enclosed in a separate pocket, so that no harm can result from the accidental breaking of one.

An English-built Speed Indicator.—The speed indicator manufactured by S. Smith & Son, Strand, London, and enjoying a high reputation in England, France and other European countries, are now being offered to the American public. A very complete series is produced by the firm, ranging from the simple speedometer indicating only speed and mileage, to more elaborate apparatus, combining clock, speed, trip and season mileage, and electric indicator for communicating orders to driver. This latter is a particularly handsome combination and does credit to any dashboard. A great feature of the instrument is the specially light construction made possible by a new method of springing the governor. By this arrangement the instrument can be supplied in standard form, it only being necessary to alter the position of the pulley upon the metal disk attached to the wheel to obtain the necessary adjustments for the varying sizes of wheels. The speedometer is a most satisfactory one to clock, for it is practically suitable for every size of wheel and every make of car without alteration. During November, 1906, Messrs. S. Smith & Son received orders for 1,671 of their instruments. Their present output is 120 per week, but it will be increased to 200 shortly.

Enlarged Standard Jack.—The No. 1 Standard automobile jack has been greatly improved for the season of 1907 by an increase of nearly one-half in the size and by a change in the ratchet action. The area of the foot or base has been increased to nearly double the old size, so that there is no difficulty in making the jack stand up, and the yoke has also been enlarged to 2 1-4 inches wide, so that it will hold the axle securely. The Standard is a single-acting jack, the ratchet mechanism working only on the down stroke, when the operator can bring all his weight to bear upon the handle. A change in construction makes the leverage much more effective, so that the heaviest car can be raised without undue exertion. The ratchet bar is of strong steel with milled teeth. A lifting capacity of two tons is guaranteed. By reversing a cam at one side of the jack with the fingers a reverse action is obtained that permits the axle to be lowered by an easy pumping action of the handle. The entire out-

IMPROVED STANDARD JACK.

put of the No. 1 Standard jacks, which retail at $4.50 each, is controlled by the Motor Car Equipment Co., 55 Warren street, New York City.

RECENT INCORPORATIONS.

Garrett Automobile Company, Garrett, Ind.; capital, $10,000. Directors, Charles J. Rollins, Charles Colgrove and William Mitchell.

Motor Car Renting Company, Boston, Mass.; capital, $10,000. President, F. E. Litchfield; treasurer, E. S. Litchfield, Brookline.

Newton Garage and Automobile Company, Portland, Conn.; capital, $10,000. President, N. Clifford; treasurer and clerk, E. C. Verill, Portland.

Portland and Rockland Automobile Company, Portland, Conn.; capital, $10,000. President and treasurer, J. A. Lester, South Thomaston.

A. B. C. Auto Buggy Company, St. Louis; capital stock, $40,000. Incorporators, A. B. Cole, Robert L. Steele, Jr., and F. F. Stevens, 150 shares each.

Austin Agency, Inc., Boston, Mass.; capital, $10,000. To make and sell autos and vehicles. President, F. E. Litchfield; treasurer, E. Litchfield, Brookline.

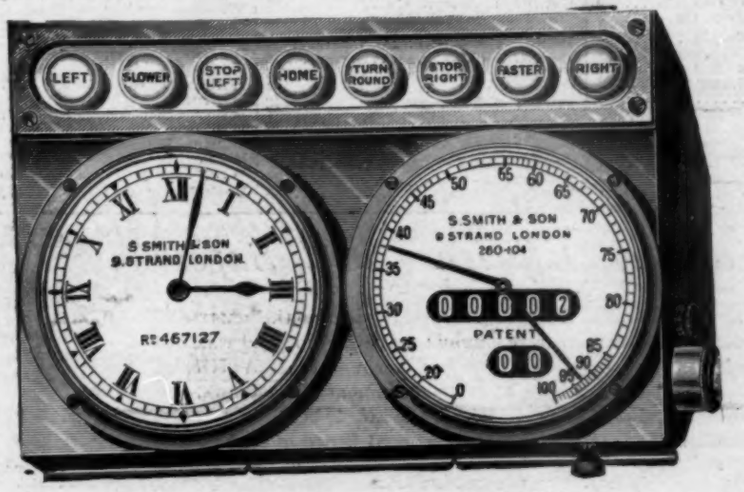
The Rivers-Jacoby Automobile Company of Toledo, Toledo, O.; capital, $25,000. Directors, W. E. Jacoby, A. F. Nicklett, A. D. Rivers, C. G. Smith and E. E. Davis.

The Citizens' Motor Car Company, Cincinnati, O.; capital, $100,000. Incorporators, Briggs S. Cunningham, H. E. Brenneman, J. M. Richardson, J. E. Thomas, and Robert Ramsey.

Southern Automobile Company, Limited, New Orleans; to deal in and repair automobiles; capital, $15,000. Incorporators, L. Stortz, Jr., George C. Escoffier and Solomon C. Meyer.

Auto Appliance Company, East Orange, New Jersey; capital, $150,000. To manufacture motor vehicles, etc. Incorporators, C. L. Beck, C. O. Geyer and F. O. Ferguson, East Orange.

Model Automobile Company, Peru, La.; capital, $50,000. To manufacture automobiles, automobile parts and supplies. Incorporators, Albert Kittner, Milton Krauss, W. S. Muer and H. P. Sullivan, directors.



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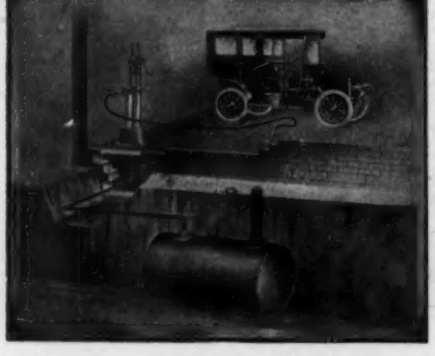

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